A study of possible predictive factors in beginning reading.

SHEARD, Mary Kathryn.

A STUDY OF POSSIBLE PREDICTIVE FACTORS IN BEGINNING READING

by

MARY KATHRYN SHEARD B A Hons

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A Study Of Possible Predictive Factors In Beginning Reading Undertaken By Mary Kathryn Sheard

To investigate possible predictive factors in beginning reading, a sample of 129 children between the ages of 5 and 8, from 2 schools matched for approach to the initial teaching of reading but with different catchment areas in terms of socio-economic indicators and educational needs, were tested on measures of word recognition ability, concepts about print and about the nature and purpose of the activity of reading, visual and auditory discrimination abilities and general intellectual ability.

The study's design allowed for examination of possible predictive values of the variables within social-class, age and sex sub-groups. An attempt was made to analyse pre-school home-based literacy experiences through a questionnaire to parents of a sub-group of children. Analysis of the data was undertaken using STATPK for elementary statistics, correlation analyses and stepwise regression, and GLIM, using multiple regression analysis in comparing different predictor models.

The results showed the child's concepts about print to correlate most highly with reading ability as measured by a word recognition test for the sample as a whole and for all sub-groups, and revealed the consistent superiority of this variable within the regression, so providing the best single predictor, whilst concepts about print, visual discrimination ability and knowledge of age provided the best group of predictors. Categorizations of concepts of reading revealed only 17% of the sample perceiving reading as deriving meaning from print, but an apparent

developmental trend was observed.

The possible contribution of the study lies in its reassessment of the Reading Readiness concept, away from traditional pre-reading training programmes towards an emphasis on the acquisition of print-specific concepts and skills within the context of meaningful reading, whereby the beginner raader appears best served by a combination of holistic ano elements approaches to the teacning of read1ny,

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The task facing the researcher:

> *"To completely analyse what we do when we read would almost be the acme of a psychologist's achievements, for it would be to describe very many of the most intricate workings of the human mind."*
>
> Edmund Burke Huey (1908)

The task facing the child:

> *"Learning to read constitutes an intellectual advance of great significance that is much valued in most societies."*
>
> Mary Ann Evans and Thomas H Carr (1985)

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1. OUTLINE OF THE SUBJECT AREA

"I would rather he would never know how to read than to buy this knowledge at the price of all that can make it useful. Of what use would reading be to him after he had been disgusted with it forever?"

Rousseau (1762)

OUTLINE OF THE SUBJECT AREA : THE ONGOING REASSESSMENT OF THE CONCEPT OF READING READINESS, AND ASSOCIATED PROBLEMS

1. Historical Development

Readiness for learning has generally been accepted to refer to the stage when the child can learn easily, effectively and without any emotional disturbance or the development of negative attitudes, and appears in basic philosophical writings as a recognised condition of "motivation poised for success". Dewey (1898); Pestolazzi (1907); Froebel (1909).

Within the context of reading this definition was anticipated in the writings of Rousseau (1762) in reference to the reading progress of his own child, where the implied relationship between the use or application of reading and the child's conceptualisations of and motivation for reading would seem equally relevant to the teaching of reading at the present time.

The concept of Reading Readiness has generally referred to the maturational and environmental factors which have prepared the child for reading. Downing & Thackray (1974) define Reading Readiness as "the stage in development when, either through maturation or through previous learning, or both, the individual child can learn easily and profitably."

The concept of Reading Readiness needs to be discussed in its historical context to reveal and attempt to explain the shift in emphasis and the re-evaluation of the concept itself which have arisen from modern research trends.

Once the concept of Readiness was assimilated by Education in varying degrees after publication of the Yearbook of the National Society For The Study Of Education (1925) a diversification of studies of the main factors involved in Readiness for Reading resulted, for example Frank's comparative study of backward readers and beginner readers (1935); Morphett & Washburne (1931) on the question of a necessary mental age for beginning reading; Eames (1938) on occular conditions of poor readers; and Harrison (1939) on readiness for the thinking side of reading. Later studies by Betts (1946); Smith (1950); Hildreth (1958) and Schonell (1960) focussed on social, emotional, experiential, linguistic and environmental factors thought to be related to Reading Readiness.

Thackray (1971) considers the above early studies as fundamental in the development of our understanding of the main factors involved in Reading Readiness. It was in later research that the concept of motivation was applied to Reading Readiness and associated with success generally. Thackray (1971) states that although studies had indicated the importance of motivation to reading success: Gates (1949); Stroud (1956); Burton (1956), there was insufficient evidence to draw definite conclusions. However, it might be suggested that a child's conceptualisations about print and the activity and purpose of reading may affect his/her motivation and subsequent degree of success in reading acquisition. Clay (1970); Johns (1980).

A question of delay or intervention

Out of the interest in isolating key factors in success in beginning reading came several studies which proposed that a certain mental age was necessary for success in learning to read: Dickson (1923); Morphett & Washburne (1931); Schonell (1945). "The concensus of results from educational research indicates that for normal pupils the more formal approach to reading should not begin before a mental age of six is reached". Schonell (1945). However, this view had already been challenged by Gates (1937) as limited (see also 'The Inadequacy of the Minimum Mental Age Theory').

This raised the basic question of whether to delay reading instruction until an optimum time was reached, as determined by performance on diagnostic Readiness tests, or whether to intervene with teaching strategies which would facilitate readiness. Harrison (1939); Harrison and Stroud (1956); Hildreth and Griffiths (1948).

Consequently, Readiness testing as a diagnostic process became an essential part of beginning reading, particularly in North America, where the majority of this work was undertaken. For the children who were not ready according to these tests, Reading Readiness programs were introduced: Harrison (1939); Evans (1945); Durrell (1954). Brownell (1951) summarised the popular thinking of the time: "Readiness, in a word, is seen to be far from sacrosanct in its development, it is rather amenable to stimulation, direction and control to an extent far greater than is assumed by those who rely upon anatomical maturation." Similarly, Bruner (1960)

attacked the conventional view of Readiness as some "magic moment" for effective learning, as first postulated by Havighurst (1953) in his 'teachable' moment theory, but rather emphasised the importance of the intuitive grasp of ideas and a deepening understanding through using them in progressively more complex forms. Clay (1972) stresses the responsibility of educators: "To relax and wait for 'maturation' when there are many concepts and skills to be developed would appear to be deliberately retarding the child in relation to what is usual in his culture . . . this optimism that 'intelligence will out' may do a gross disservice to the intelligent child making poor progress in beginning reading." The questions faced by educationalists, now as then, would appear, therefore, to be concerned with the nature and effectiveness of the intervention, the stimulation and direction introduced, and the influence of such pre-reading activities on subsequent reading progress. That is, whether the holistic approach Smith (1977), or the elements Goodman (1972) approach to the teaching of reading is preferable, and whether, in fact, they are mutually exclusive or whether they may be reconciled in an approach which recognises the child's needs for both relevancy and meaning and for the development of relevant skills leading to successful reading.

This would appear to be the most relevant question to be addressed by reading researchers at the present time.

The Inadequacy of the Minimum Mental Age Theory

The growing interest in all factors possibly related to Reading Readiness led to a further consideration of Gates (1937) view that mental age was arbitrarily linked to reading achievement, in that the necessary mental age for successful reading was influenced by such factors as materials, teaching strategies, teacher effectiveness, class size and preparatory work. The definition of Readiness provided by the Encyclopedia of Educational Research (1960), reflected the new and wider approach to Reading Rediness at that time. "To be completely ready for an educational activity or learning experience a child must want to learn, be sufficiently mature physiologically, possess appropriate mental abilities, and finally have had the right kind of educational experiences."

Reading Readiness was therefore no longer considered to be solely dependent on a specific mental age. Researchers generally accepted its complex nature and the need for serious investigation of all relevant factors. Gates (1937); Sanderson (1963); Lynn (1963); Downing (1963).

More recent researchers have suggested that the intellectual factor may be compounded with other factors relating to Reading Readiness and early reading progress, Detterman (1982); Stanovich (1984).

Factors considered to be related to Reading Readiness, and the development of the Thackray Reading Readiness Profiles

Thackray (1964) in a study of the relationship between Reading Readiness and reading progress produced positive correlations of several variables with reading progress as follows: auditory discrimination .53; visual discrimination .50; general ability .47; home environment .42; emotional and personal attitudes .10-.36.

Downing and Thackray (1971) identify auditory discrimination and visual discrimination as correlating most highly with reading achievement, based on the above correlations and suggest, therefore, that these are two of the most important factors contributing to Reading Readiness, the others being general intellectual ability, vocabulary and concept development, the ability to pay attention and follow directions, and left-to-right orientation.

The Thackray Reading Readiness Profiles, the first original British Reading Readiness Tests to be published, were developed to measure directly or indirectly those skills considered to contribute most importantly to Readiness for readingas a guide to appropriate pre-reading activities, Thackray (1972). Whilst not claiming that these tests measure Readiness for reading, they are intended to identify strengths and weaknesses related to reading: vocabulary and concept development, auditory discrimination, visual discrimination, and general ability.

The standardisation of the Thackray Reading Readiness Profiles took place in October, 1973. The number of children tested was 5,500 drawn from 350 schools in urban and rural districts. The 5,500 children who completed the Profiles had been in school approximately six weeks at the time of standardization, and ranged in age from 4 years 8 months to 5 years 8 months, and the average was 5 years 0 months. The range of validity coefficients for the Profiles was between .45 and .58.

Clay's Analysis Of Reading Readiness

Clay's (1971) analysis of Reading Readiness would appear to contrast with that of Thackray whilst being in sympathy with Bruner's (1960) view of the intuitive grasp of ideas and Vygotsky's (1963) dynamic concept of Reading Readiness as "a zone of potential development" where meaningful reading instruction involves readying the child for the task and the task for the child.

Clay regards Reading Readiness as a transition period during which time the child gradually changes from a non-reader to a beginner reader. The Reading Readiness programme should couple the child's past learning with new learning, and gradually bring the child through the transition. The child's old response would undergo a transformation when he/she develops new expectations about the links between oral and printed language. Clay argues that this can only take place in the presence of print and when the child actively seeks to discover how oral and written language are related.

Early reading activities, Clay suggests, should involve working with print in a variety of ways so that the child "slowly consolidates the total network of relationships", rather than an emphasis on tasks which appear to the child unrelated to the activity of reading.

Clay's position is therefore that of an interventionist, but where the intervention is directly related to concepts about print as a meaningful form of communication. Clay advocates the early detection of reading difficulties, having devised tests of the child's concepts about print for this purpose, and reading recovery programmes directed towards strategies or operations which generate further appropriate reading behaviours. Clay is therefore critical of the traditional concepts of reading age and Reading Readiness, and of the optimism that "intelligence will eventually win out", regarding these as barriers to the early identification of children with reading difficulties. "Better descriptions of reading behaviour are needed both to avoid and to identify early reading failures; in particular, descriptions are needed of the early reading behaviours to be learned in the transitional period. Assuming that different programmes stress different aspects of the reading process at different times, descriptions are needed of the sequential accumulation of skills under different methods and programmes", Clay (1972).

Clay's work has contributed significantly to the development of the Reading Readiness concept in appearing to combine the holistic and elements approaches to the teaching of reading: that is, in proposing that effective reading development can only take place within a meaningful print environment, with an emphasis on concepts about print, whilst equally

stressing the importance of the acquisition of specific print-related skills at the appropriate stages.

Clay's work has therefore been influential in the recent shift in emphasis in the concept of Reading Readiness.

The recent shift in emphasis within the Reading Readiness Concept

In recent years there has been a shift in emphasis in research away from the traditionally held concept of Reading Readiness, in terms of maturational and developmental processes which underlied the minimum mental age concept for success in learning to read, towards one which recognises the importance of cognitive developmental factors and related sociological factors in reading acquisition.

The importance of a child's concept of the nature of reading and his/her understanding of its technical language has been suggested in several early studies: Vernon (1957); Vygotsky (1962); Reid (1966) and supported by more recent studies: Downing (1970, 1973, 1977); Clay (1969, 1971, 1972); Mattingly (1972); Dearing (1980); Ayers and Downing (1982); Downing, Ayers and Schaeffer (1983).

The above research conclusions indicated that often young beginner readers have serious difficulty in understanding the purpose of written language and that they have only vague expectations regarding how people read, being particularly confused by the use of abstract linguistic terminology. Downing's (1977) summary of findings supports the view that cognitive

clarity, related to concepts of language, must be achieved before a child is able to succeed in beginning reading. Studies concerned with the linguistic awareness of the beginner reader, and with analysing his/her response to print, for example Clay (1972); Wells & Raban (1979); Johns (1976, 1980); Tovey (1976), have assumed increasing importance in an attempt to further understand and facilitate the processes involved in learning to read.

Motivation for learning the skills of reading and writing have therefore increasingly been considered to depend on making these activities relevant to the child, thus lending support to Van Allen's (1961) "Language-experience" approach in which reading and writing are presented as purposeful and relevant modes of communication. Ashton-Warner (1961); Cazden (1977); Harste, Burke and Woodward (1983); Dixon (1984).

Recent papers, specifically addressing themselves to the question of Reading Readiness have further reflected the shift in emphasis in current thinking. For example, the LARR test (Linguistic Awareness in Reading Readiness) Downing, Ayers & Schaeffer (1983), recognises the trends in recent research findings that "success in learning to read and write is more closely associated with factors such as visual and auditory perception and letter-name knowledge".

Similarly, Downing & Thackray (1982) place greater emphasis on linguistic awareness, suggesting that the child needs to develop a variety of linguistic concepts to make progress in beginning reading. Moreover, they state that "distorted ideas on Reading Readiness which became popular in

the mid-sixties, particularly those related to the minimum mental age concept, are still in evidence in the 1980's".

It would appear, therefore, that further research concerned with assessing the relative importance for later reading progress of a child's conceptualisations about print and of the activity and purpose of reading, and comparing these against other factors related to Reading Readiness, would be of value at the present time.

The Influence of Environmental or Cultural Factors

Research in North America in the 1950's studied environmental, or cultural factors related to Reading Readiness. Young & Gaier (1951) identified social class differences and general home stability as being important for Readiness. Almy (1950) and Sheldon & Carillo (1952), suggested that cultural factors such as family size, number of books in the home, and parent's education correlated positively with reading success.

Thackray (1971) includes within cultural factors aspects of economic conditions, opportunities for social experience, patterns of language and speech in the home. Thackray (1971) suggests that while some of these aspects are more important than others, all could be said to affect the total experience which the child brings to the reading situation, and which in turn affects early reading ability.

However, environmental factors did not receive thorough investigtions in early studies of Reading Readiness, and it is in more recent research that appropriate analyses of these factors are made, for example Durkin (1965); Nurss (1979); Clark (1976); Wells & Raban (1979), where the interaction of the child and the environment is analysed as well as the reading instructional environment. Some more recent studies have indicated the importance of related sociological factors which may or may not be directly attributable to social class, but which may significantly effect the social and learning environment of the child and so influence his/her understanding of the activities of reading and writing and his/her Readiness for reading, for example, level of literacy in the home Wells & Raban (1979); Ingham (1981); Hubbard & Salt (1975); Tizard, Schofield & Hewison (1982).

These recent studies would appear to contribute significantly to the ongoing reassessment of the Reading Readiness concept, particularly that of Wells & Raban (1979) which concluded that of all factors considered from both home and school, level of attainment in literacy at age 7 was most powerfully predicted by the child's "academic readiness for school", specifically, knowledge about the activities of reading and writing. Similarly, the study by Hubbard & Salt (1975), concerning the relationship between family characteristics and attitudes and the child's pre-school and early school activities related to reading, produced significant findings. Hubbard & Salt concluded that the transition from pre-school to school is a crucial period, experiences during which influence the child's level of success in early reading.

Assessment of the 'reading instructional environments' of both home and school, including pre-school home-based experiences related to the activities of reading and writing, therefore appears to be of value in the development of the concept of Reading Readiness.

Sex Differences

Some recent research studies have attempted to investigate sex differences related to Reading Readiness: Thompson (1976); Downing (1980); Day & Hollingsworth (1983); Blatchford et al (1985). Whilst the general findings tend to be inconclusive, the research evidence appears to support Thompson's (1976) finding that sex differences in early reading attainment appear to be less than many differences between individuals of either sex. However, Thompson advocates an awareness by researchers and educationalists of the developmental trends of sex differences in relation to reading. A recent study by Blatchford et al (1985) has indicated the superiority of girls in literary tasks on school entry. It would seem appropriate, therefore, to investigate possible sex differences in studies of factors relating to Reading Readiness and early reading progress.

2. Specific Problems Related To The Concept Of Reading Readiness

The Problem of Definition

A survey of much of the early literature concerned with Reading Readiness and early learning progress failed to find an adequate definition of reading. In the absence of definitive statements many questions remain unanswered, and progress towards a clearer understanding of the learning processes involved in successful reading acquisition and development is obstructed.

For example, what is the nature of the activity for which children are to be prepared or "readied"? What is the purpose and activity of reading? What are the aims of early reading instruction? If researchers and educators fail to provide relevant answers to such questions, remaining in a state of "cognitive confusion" regarding these issues, it is unlikely that beginner readers will easily attain "cognitive clarity" necessary for reading progress, as suggested by Downing (1971).

Thackray's (1971) definition of Reading Readiness contributes little to our understanding, particularly in terms of application to classroom practice: "Reading Readiness is a complex of many abilities, skills, influences and interests, each which contributes in some measure to the process of learning to read". Similarly, the Thackray (1974) Reading Readiness Profiles were designed to give a "reliable measure of . . . important reading readiness factors . . . strengths and weaknesses in these vital reading readiness skills and abilities". Whilst Thackray (1974) proposes

that Vocabulary and Concept Development, Auditory Discrimination, Visual Discrimination and General Ability constitute the most important skills and abilities, these continue to be separate skills and abilities and do not describe reading itself. Even in their reaffirment of the concept of Reading Readiness, Downing & Thackray (1982) appear to further evade the problem of definition.

Similarly, many standardized tests of 'reading', whilst describing what they measure in terms of test-item content, fail to provide a clear definition of reading underlying the test. Reading may therefore be presented as word recognition ability or literal comprehension ability, for example. Particularly where such standardized tests are used to produce Reading Ages and Reading Quotients, results would appear to be both inaccurate and misleading. A more important problem, perhaps, is that of the inferences made by the teacher from the child's performance on such tests, and the implications for subsequent teaching style and practice.

Particularly at the stage of beginning reading and the development of early reading skills a clear definition of reading is required for the teacher to identify and focus on those skills which are necessary to the child for success in reading. Similarly, the nature and purpose of reading must be understood by the young reader in order to make sense of the activity, and for it to have relevance and meaning. Circular definitions of Reading Readiness and of reading are evasive and harmful, perpetuating the confusion. McKinnon and Waller (1981).

Clay (1972) would seem to offer a more precise and pragmatic definition of reading: "Reading is a process by which the child can . . . extract a sequence of cues from printed texts and relate these, one to another, so that he understands the precise message of the text. The child continues to gain in this skill throughout his entire education, interpreting statements of ever-increasing complexity".

Moreover, Clay (1972) suggests the following abilities are required for success in learning the reading process: good control of oral language; well-developed skills of visual perception; attainment of a level of brain maturity and experience to enable coordination of what is heard in language with what is seen in print; sufficient coordination of hand and eye to enable learning of the directional movement patterns required for reading.

Clay's definition of reading, and the reading-related abilities, are therefore concerned with reading as communication through print, as understanding text.

Similarly, Clark (1976) defines reading as "the receptive phase of communication between the writer and the reader", where the task of reading is one of "predicting one's way through print" successfully.

Possible acceptance of the definitions offered by Clay (1971) and Clark (1976) at the present time, would appear to suggest therefore an emphasis on teaching the communicative skills involved in reading through focussing on the child's conceptualisations about print and the purposes and activity of reading itself.

Early research attempts to identify the important factors related to success in early reading resulted in a sub-division of pre-reading and early reading skills to be learned, which in turn lead to the development of Reading Readiness programmes designed to break the learning down into sequences of small, easily managed tasks, thereby dealing with skills and subsidiary skills. This gave rise to a clash of opinion as to the correct approach to adopt in the teaching of reading - the holistic approach, as advocated, for example, by Smith (1978) and Goodman (1972) which rejected the teaching of "unrelated skills" and favoured reading as a language process to be mastered in a rich reading environment; or the elements approach, a structured skills-based approach.

Some research evidence, for example Clark's (1976) findings related to the interest in literacy in the families of young fluent readers, and Wells & Raban's (1979) finding of the child's understanding of the functions of literacy at entry to school predicting future success in reading, lend support to the holistic view that a rich reading environment with an emphasis on shared story reading and meaningful print does promote a 'set' for success in early reading.

Similarly, Hoffman & Fillmer (1979) stress the importance of providing children with the opportunity to inquire and discover concrete concepts before the formal teaching of reading is introduced.

If, however, 'set' for success is not achieved, and concepts are not discovered, further delay in teaching would appear to constitute "a gross disservice to the intelligent child making poor progress in beginning reading" Clay (1972). Similarly, Malmquist (1970) states "To fail to observe that (this) early reading behaviour is blocked either by inadequate prior learning or by current confusion, and to omit to provide the required complementary activities, must be poor teaching. . .".

The elements approach to the teaching of reading, however, with the emphasis on training and practice of skills and subsidiary skills, reduces reading to what appears to be a set of unrelated activities, which could lead to confusion on the part of the child as to the nature and purpose of reading. Moreover, there is little research evidence to support the view that skills training programmes improve performance on reading (see Section B2a on Perceptual Factors), or that there is any transfer of learning to reading.

More recent research appears to combine aspects of both the holistic and elements approaches which would seem to be acceptable in terms of proposals made by Clay outlined previously. For example, Evans & Carr (1985) stress that early reading success depends on appropriate skills acquisition in the beginning stages of learning to read: "Reading, then, is a complex skill that requires a certain amount of direct instruction and supervised practice in order to establish minimum levels of competence in beginners . . .. Therefore, carefully organised direct instruction would seem to be a critical part of beginning reading activity, needed to provide a foundation on which strategically effective knowledge-driven reading can later be

built". Evans & Carr (1985) conclude: "Development of print-specific skills endows a beginning reader with the resources to use knowledge and inference flexibly rather than slavishly, making early concentration on print-specific skills a gateway - not an impediment - to effective reading".

The above recommendations of Evans & Carr (1985) would appear to answer Goodman's (1972) criticism of skills teaching: that we have been teaching reading as a set of skills to be learned rather than as a language process to be mastered.

SUMMARY

Since the concept of Readiness was assimilated by education, its relevance and application to reading has undergone many revisions and reassessments which continue at the present time. Maturational, intellectual, environmental, motivational and conceptual factors have been considered to be associated with Reading Readiness.

A major question underlying much research and educational practice has been whether to delay reading instruction until an 'optimum time' of Readiness, or whether to intervene with pre-reading programmes aimed at facilitating Readiness. This question has caused controversy and opposite schools of thought, particularly in reference to the nature of the intervention and the general approach to the teaching of reading: the holistic versus the elements approach. However, these opposite approaches may possibly be reconciled in one which emphasises the importance of both relevancy and meaning and the need for skills development, particularly in relation to print-specific skills.

In recent times the Minimal Mental Age theory, which was popularized in some earlier studies, has lost favour due to the increased awareness of the complexity of factors influencing Reading Readiness. Some recent researchers have suggested that the intellectual factor is itself compounded in other reading related factors, particularly where complex groups of variables are involved. (Stanovich, 1984).

Thackray (1964) produced positive correlations between several measures of Reading Readiness and measures of reading achievement, and similarly later (1971), identifying auditory and visual discrimination abilities as correlating most highly with reading achievement. The Thackray Reading Readiness Profiles (1974) were devised to measure those skills considered to contribute most importantly to Reading Readiness.

However Clay (1971) suggests a contrasting definition of Reading Readiness to that implied by Thackray. Clay regards it as a transition period from non-reading to beginning to read, characterised by new expectations in the child about the links between oral and printed language. Clay's emphasis is therefore on working with meaningful print and developing concepts about print and print-specific skills, thereby appearing to combine the holistic and elements approaches to the teaching of reading.

The recent shift in emphasis in the Reading Readiness concept appears to focus on cognitive developmental and related sociological factors in reading acquisition. Of particular importance is the child's concepts of the nature and purpose of reading, after Vernon (1957), Vygotsky (1962) and Reid (1966), and the child's concepts about print, after Clay (1972), where a state of "cognitive clarity" and linguistic awareness is required for success in reading, Downing (1971). These would seem to be influenced by the nature and quality of the reading-instructional environment of both home and school. Of particular relevance appears to be the child's "academic readiness for school", as determined by pre-school home-based experiences particularly of reading and writing activities, and reading experiences during transition from pre-school to school.

It would seem appropriate, therefore, in any study of possible predictive factors in beginning reading to consider the recent shift in emphasis as outlined above and to assess both the relative importance of the child's concepts about reading and about print, and aspects of reading-instructional environment of home and school, as well as further investigating those measures of Reading Readiness identified by Thackray (1964) as correlating significantly with reading achievement.

As in the past, however, present studies of Reading Readiness and early reading progress are faced with the problem of definition: an apparent lack of an adequate defintion of reading, which leaves researchers, educators and children in a state of "cognitive confusion". Many standardised tests, for example, present reading as a function of the skills which the tests themselves measure. Such circularity of definition would appear to be evasive at least, and harmful at most, perpetuating the confusion.

In view of the apparent failure to agree on definition, it would seem that researchers are at present at liberty to adopt a definition of reading which is most suitable to their experimental design, although the adopted definition may influence their findings. In view of recent research and the shift in emphasis in the Reading Readiness concept, the definitions of reading offered by Clay (1972) and Clark (1976) would seem most appropriate at the present time, emphasising the communicative skills involved in reading and the importance of the child's conceptualisations about print and reading itself.

The debate surrounding the holistic and elements approaches to the teaching of reading, which has presented a dilemma for many teachers of reading, appears to have developed recently towards recognising the value of combined aspects of both approaches: that is, the development of print-specific skills within the meaningful print environment of the language-experience classroom. It is to these areas, therefore, that research might profitably be addressed at the present time, in order to contribute significantly to the ongoing reassessment of the concept of Reading Readiness.

B. LITERATURE REVIEW

". . . a great deal of new information has become available about linguistics, children's ability to deal with language, perception, infant logic, and how children learn. This means that we should need to rethink reading theory at the present time".

James Hemming (1967)

Subsequently: *"We know relatively little as to what basic cognitive skills enable children to identify large numbers of words. In addition, we have yet to identify the most effective methods/ materials for teachers to use in promoting these skills".*

Juel & Roper/Schneider (1985)

FACTORS CONSIDERED RELEVANT TO READING READINESS AND EARLY READING ABILITY

1. Reading Readiness and Early Reading Ability

Factors possibly associated with early reading disability

Evaluations of the evidence from some early studies concerning the advantages of delaying formal reading instruction, promoted some researchers to caution against "rushing the child into reading". Stroud (1956); McGraw (1936). Some writers identified the too early introduction to reading as one of the prime causes of reading disability, for example Doll (1953) and Bond & Tinker (1957) who wrote "Reading disability is frequently caused by starting a child in a standard reading program before he has acquired the readiness which will assure success in classroom reading activities". Bond & Tinker developed this further in terms which anticipated the more recent interpretations and understanding of the concept of Reading Readiness: "Due to his lack of experience, verbal facility, intellectual or emotional maturity, or a combination of these, he is unable to achieve enough of the learning to handle satisfactorily what is coming next . . . such a child is likely to develop an attitude of indifference to reading".

This view appears to reflect the sentiments of Rousseau (1762) and goes further than the later claims of Downing (1963) and Thackray (1964), that children below the mental age of 6 can learn to read successfully if the instruction and materials are of an appropriate standard. Similarly, Bond & Tinker's analysis appears to go further than Gates' (1949) suggestion that "most (reading) difficulties, ranging from the least to the most serious, are due primarily to failure of the pupil to acquire techniques that might have been given at the right time". Such statements fail to recognise the importance of the child's concepts and understanding of the purposes and activity of reading, as well as the experiences and emotions which the child brings to the reading situation.

Other early studies focussed on the relationship between emotional factors and reading progress, and while many researchers were in agreement that emotional difficulties and symptoms of personality maladjustment were frequently found in association with reading difficulties, they disagreed as to whether the emotional problems were causes or effects of these difficulties, for example Monroe (1935, 1946); Robinson (1946); Young & Gaier (1951); Schonell (1961).

However, the state of "cognitive confusion", described by Vernon (1957) when referring to the condition of many beginner readers and children who continue to fail in reading, could result in lack of motivation for reading and, where this becomes a long term condition, in reading failure. "The reading disabled child . . . does not seem to understand why written language is what it is" Vernon (1957). A clear definition of reading does not appear to be supplied in the above writings. The writer would propose,

therefore, the following definition of reading at this stage, as suggested by Clark (1976) that reading is the receptive phase of communication between the writer and the reader; moreover, as the child becomes a competent reader, the task of reading is one of "predicting one's way through print" successfully. This in turn would require clear conceptualisations about print and skilful use of linguistic cues on the part of the child. The role of researchers and educators would therefore appear to be in identification and implementation of procedures to prevent and redress reading disability.

Hart (1983) for example, suggests "neurological downshifting" as a possible cause of difficulty in the early stages of reading acquisition, where "downshifting" is a process by which "the child becomes frozen, unable to think or communicate, resulting in an inability to talk or in guessing randomly under threat of public failure". According to Hart the sudden emphasis, experienced on entry to school, on individual words, the spacing not corresponding to speech, and word-by-word reading may result in the child's eager interest in meaning being "shunted aside in favour of enormously complex rules and mechanics, presented with adult logic that may prove totally baffling". Hart suggests that "downshifting" results and consequently learning is reduced.

The recommendations made by Hart for classroom practice concur with those of other writers above: "Once we regard initial reading instruction as continuing the natural language development and highly successful pre school learning, we can design and use a great variety of compatible approaches and techniques that recognise these. . .. The aggressive

teaching of (reading) skills will not produce the readers we want". Hart (1983). This lends further support to the view of Goodman (1972), that "We have been teaching reading as a set of skills to be learned rather than as a language process to be mastered", and to Goodman's suggestion that "universal literacy" will be achieved only when schools "stop interfering with learners in the name of helping them".

Prevention of reading disability would therefore seem to depend on teaching directed towards increasing the "cognitive clarity" and print-specific skills of the child within a language-experience learning environment.

Tests of Reading Readiness and Pre-Reading Activities

As a result of early research findings outlined previously in this section, Reading Readiness testing became an essential part of beginning reading, where, for the children identified as not ready by these tests, reading readiness programs were introduced, e.g. Gates (1937); Harrison (1939); Hildreth & Griffiths (1948); Harrison & Stroud (1956); Schonell (1961).

The findings of Robinson and Hall (1942) later supported by Bremer (1959) in America and Thackray (1964) in Britain, found Reading Readiness tests to correlate with reading success, Thackray producing a correlation of .59, and teacher's rating scales to correlate with reading success at .62, the criterion for "reading suggess" being performance on the Southgate reading test. As a result Reading Readiness profiles, inventories and checklists were widely introduced in schools, Betts (1946); Gray (1956); Harris (1961); Schonell (1961); Downing & Thackray (1972). Reading Readiness

tests became widely used, and were largely considered to be of diagnostic value. The problem facing researchers in this area is that although much of the background research to and development of these tests was carried out in America, as described for example by Ollila and Nurss (1981), the findings did not necessarily apply to British children; different cultural and educational influences and practices might reduce the validity of such tests for British children.

As Downing and Thackray (1971) point out, where Reading Readiness had been concerned with fitting the child for reading, the emphasis became directed at fitting the reading to the child, where Reading Readiness inventories were intended to determine diagnostically what kind of Readiness activities each child needed to make further progress.

This would seem to reflect the dynamic view of Readiness as proposed by Vygotsky (1963) as "a zone of potential development" bridging the gap between the child's current state of development and the next step forward. However, the evidence concerning the effectiveness of special training in pre-reading activities in order to promote Reading Readiness has been conflicting. Scott (1947); Bradley (1956); Durrell & Murphy (1953). As the majority of research in this area has been concerned with the evaluation of training in perceptual abilities and related pre-reading activities, certain criticisms have been directed at training children in skills which are unrelated to reading for meaning, for example, Goodman (1972); Clay (1972). There appears to be little evidence to suggest that learning on skills training transfers to learning to read in the simplistic way which is often assumed in training programmes, but rather, the

relationship between the development of perceptual abilities and the transition from pre-reading to reading appears to be a complex one, Ehri & Wilce (1985). It would appear, therefore, that further research needs to be undertaken in this area.

The Relationship Between Reading Readiness Tests and Reading Progress

In Thackray's own study (1964) of the relationship between Reading Readiness and reading progress, using the Harrison-Stroud Reading Readiness Profiles and the Southgate Group Reading Test, a correlation of .59 was obtained. In particular the visual and auditory discrimination tests correlated most highly with later reading achievement, .50 and .53 respectively.

Further correlations between tests of Reading Readiness abilities and reading achievement tests (the Schonell Graded Word Reading Test and the Neale Analysis of Reading Ability) gave the visual and auditory discrimination correlation of .43 and the intelligence and vocabulary correlations of .34, the correlations for each being averaged. Thackray (1971) suggests this supports the view that visual and auditory discrimination are more important factors in Reading Readiness than are mental ability and language development.

Thackray's Reading Readiness Profiles (1974) were the first original British Reading Readiness tests to be published. Whilst being diagnostic in nature, the Profiles failed to make any new contribution to our understanding of Reading Readiness, but rather appeared to be a simplistic

departure from Thackray's earlier position, where other factors including environmental, emotional, motivational and personality factors had been considered.

Gibson and Levin (1975) cite various authorities who suggest that many Reading Readiness tests are poor predictors of reading achievement, Rosen (1966); Rosen and Ohnmacht (1968); Pick (1970).

This view appeared to be supported by findings of Calfee (1972) who administered some of the tests in the Wisconsin Prereading Skills Program (Venezky, 1971; Chapman 1971) to beginner readers in their first year of reading instruction who were later tested with measures of reading achievement at the end of this first year. (The assumption behind the Wisconsin program was that reading is not a single skill but a complex of skills which can be divided into simpler component skills, a view which was criticised by Goodman (1972) and Smith (1979), the distinction being fundamental to the Reading Readiness debate). In Calfee's study, multiple regression analyses with several samples of children suggested the primary importance of "phonetic segmentation and identification", that is "the ability to analyse a complex acoustic structure". Vocabulary was also high in priority, thus lending some support to Thackray's profiles (1972). However, Calfee points out that the importance of these tests for predicting learning to read should not be exaggerated, for even as multiple predictors they accounted for only 30% of the variance in reading achievement in the first year of instruction.

It would therefore seem necessary to further investigate other important factors such as the child's conceptualisations of print and of the purposes and activity of reading itself in order to successfully predict progress in early reading.

Piagetian measures and reading ability

The study of Lunzer et al (1976) which relates Piagetian measures, particularly operativity, to reading and mathematical ability, produced findings relevant to any reassessment of the Reading Readiness concept, particularly in terms of concept development. Lunzer's study also has relevance to the present study as a number of other variables are common to both studies: performance on auditory and visual tests (involving short term memory in Lunzer's study); social class, and conceptual learning. Moreover, Lunzer et al were concerned with assessing the relative predictive power of different variables, principally measures of operativity and language, in predicting reading and mathematical progress. The factor of operativity was superior to measures of language in predicting success in reading unrelated words for socio-economic groups 1 and 3, and comparable with language for socio-economic group 2. Measures of operativity and language were found to have similar predictive value for reading comprehension (.38 and .37 respectively). "Operativity involves transformations of reality by means of internalized actions that are grouped into coherent, reversible systems (joining and separating, etc.)" Piaget & Inhelder (1966). The operativity measures used by Lunzer et al included measures of conservation, of classification and of seriation, which reflect various abilities in conceptualisation.

The concept of reading in reading tests : Word Recognition or Comprehension?

In relation to the discussion of Reading Readiness, the above findings of Lunzer et al appear to reinforce the need for a clear operational definition of reading relating to the concept of Reading Readiness, reading acquisition and early reading development.

In the context of the Lunzer study, for example, if implications for Reading Readiness could be drawn, would Reading Readiness be associated with Readiness for word recognition, or readiness for reading comprehension? As Lunzer et al point out, the Neale Analysis of Reading Ability features whole paragraphs and might be expected to "furnish a less crude index of reading ability than the Schonell test which involves reading unrelated words". However, the intercorrelations of these tests were high, .9, and Lunzer et al conclude "It seems clear that, at this level, the familiar word recognition test is as valid a measure of reading skill as any. This is very probably because in any text or test designed for very young children, both sense and grammar must be kept simple . . .. The correlation between sentence reading and word recognition is not accidental but intrinsic". However, Steadman & Gipps (1984), question why the apparent popularity of the Schonell test is maintained "when informed opinion considers it to be seriously out of date both in the model of reading which underlies it and in the available norms". Similarly, "this test is not in tune with todays reading goals which stress in particular reading for meaning" Goodacre (1974).

The different aspects of reading which Word Recognition and Reading Comprehension represent would, therefore, appear to feature strongly in the Reading Readiness debate outlined so far.

The Concept of Reading Age

A similar obstacle to clarification of Reading Readiness is intrinsic to the use of Reading Age and reading test scores themselves. As Mosely (1977) suggests, with reference to children in their second school year, "Most reading test scores reflect experience rather than ability among 6 year olds, who tend to do well on an exercise which is related to their reading scheme, and badly on one that isn't".

Similarly, Clay (1972), regards the concept of Reading Age as a barrier to the early identification of reading problems. According to Clay, the Reading Age Score does not describe the skills the child has, or the skills yet to be taught, but tends to force teachers to delay for several years. Because tests involve test error, small differences in scores cannot, Clay suggests, be considered significant, and only sizeable differences between Reading Age and Chronological Age can be reliable. "However, the child is likely to be 8:0, with 3 years of reading failure behind him before special help is considered, and yet probably classroom teachers have always classified these children as bottom group readers". Clay (1972).

Clay suggests a further problem associated with the concept of Reading Age is that teaching is often according to a particular prescribed or preferred method, and evaluation of progress is often undertaken by use of an easily

administered standardised test. Moreover, "when the test isolates a failing child there is no ready means of translating the test score into the classroom practices of that teacher".

It would appear, therefore, that accurate descriptions of the child's reading behaviour would be preferable indicators of reading progress than the use of the child's "reading age", particularly as there is uncertainty as to what reading tests actually measure. Review of various testing manuals and literature reveals little in the way of definitions of reading underlying the various testing procedures, and as different reading tests assess various reading-related skills, such as word recognition or comprehension, tests can only be said to measure the performance of the child on those specific test items of a particular reading test. Therefore the concepts of reading ability and Reading Age derived from the reading test would appear to have gross limitations.

The Concept Of Reading Readiness Reaffirmed

In their recent paper, Downing and Thackray (1982) respond to an "apparent increasing distaste for the concept of Reading Readiness", and an ensuing "impatience with the confusion, ambiguity and misrepresentation" that have come to be associated with this term.

They cite Southgate's (1980) study of the reading trends of 7 to 9 year old children, and interpret the findings to indicate that large numbers of the children involved in the study were "not ready" for the books they were reading. Downing and Thackray suggest that inability to cope with the

reading task causes negative attitudes to reading, and whilst reaffirming their support for the Reading Readiness concept, that "readiness is a fact of life in skill development", a view supported amongst others by Cronbach (1977) and Carnine (1976, 1980); they regard as "distorted" some of the Reading Readiness ideas popularised in the 1960's and still in evidence in the 1980's, where skills and sub-skills are practiced in isolation.

Regarding a critical mental age for beginning reading, Downing and Thackray state, "Statements concerning the necessary mental age at which a pupil can be entrusted to learn to read are essentially meaningless". Instead, Downing and Thackray place a greater emphasis on language awareness and the development of a variety of linguistic concepts (word, sound, letter, sentence) to benefit from reading instruction. Recognition of this led to the development of the Linguistic Awareness in Reading Readiness Test (LARR), Downing, Ayers & Schaefer (1983). What the child needs to know will depend greatly on the nature of the tasks to be met in the instruction. This view supports Vygotsky's "zone of potential development" theory, representing Reading Readiness as the dynamic process described earlier. Implicit in this is the teacher's knowledge of the important Reading Readiness sub-skills and the need for assessment of these soon after entry to school. Downing & Thackray (1982).

Moreover, as Durkin's studies (1966) confirmed that some children were entering school already reading, there appeared to be a necessary rethinking of the concept of Reading Readiness away from a product resulting from maturation and basic skills training towards a process evolving as the child interacts with his/her environment, as suggested for

example by Nurss (1979); Jones (1981) and Morrow (1983).

More recent studies, therefore, tend to reflect a reassessment of the Reading Readiness concept to include those aspects of early child development which have been identified as important factors in early reading progress: linguistic awareness and the child's conceptualisations about print; cognitive development; factors relating to home, school and the learning environment generally; as well as perceptual and discrimination abilities.

Moreover, while these factors may exert an important independent influence, recent research would suggest that a more complex analysis, where particular factors are considered in interaction with each other, would perhaps be more appropriate.

SUMMARY

A review of the literature suggests the complexity of the relationship between Reading Readiness and early reading ability, and moreover, that the complexity may be increased by the use of some educational procedures and concepts. In order to further our understanding of the relationship between Reading Readiness and early reading ability, therefore, reassessment and clarification of these procedures and concepts would seem appropriate.

The concept of reading disability, and investigations of possible associated factors, has concerned many researchers and educationalists. It has been suggested that reading disability in the early stages is caused by "rushing the child into reading" before he/she has acquired the necessary "readiness"; the child cannot therefore "handle satisfactorily what is coming next". Whilst recognising the importance for Readiness of the child's emotional and motivational levels, and quality of pre-school experiences, the above suggestion would seem to strongly imply the importance of appropriate teaching whereby the child is confident and competent to handle satisfactorily what is coming next. That is, the disabling condition of "cognitive confusion", the lack of understanding of the nature and purpose of written language, should be transformed through relevant teaching/learning experiences, focussing on clear conceptualisations about print and skilful use of language cues to "cognitive clarity", whereby the child will be able to predict through print successfully. Similarly, the problem of "downshifting", the inability to think or communicate due to aggressive mechanical teaching,

should be avoided by continuation of the successful pre-school learning via compatible approaches (Hart, 1983) and techniques which foster increasing linguistic awareness and conceptualisations about print.

Reading Readiness testing and programmes were widely adopted as an essential part of beginning reading. Whilst Reading Readiness tests were found to correlate positively with reading success in some cases, for example Thackray (1964), who found tests of auditory and visual discrimination to correlate most highly with later reading achievement as indicated by performance on the Southgate reading test, other authorities suggest that Reading Readiness tests are poor predictors of reading achievement. (Rosen 1966; Pick 1970; Calfee 1972).

Moreover, the evidence concerning the effectiveness of Readiness training programmes suggests that there is little transfer of learning of pre-reading skills, particularly perceptual skills, to reading. It would therefore seem necessary to investigate other factors, such as the child's conceptualisations about print, to successfully predict and facilitate progress in early reading.

The different aspects and definitions of reading which underly various reading tests often obscure further the relationship between Reading Readiness and reading ability, even though the intercorrelations of such tests may be high, for example the Schonell Graded Word Reading Test (word recognition) and the Neale Analysis of Reading Ability (comprehension).

Similarly the concept of Reading Age has been considered both limited and misleading, where test scores and converted Reading Ages often reflect experience rather than ability and where only sizeable differences between Reading Age and Chronological Age may be reliable, thus delaying reading recovery programmes. Accurate descriptions of reading behaviour would therefore seem to be preferable indicators of reading ability and progress. The recent reassessment and reaffirmation of the Reading Readiness concept emphasises those factors considered to be most directly associated with reading ability on the basis of recent research, in particular linguistic awareness and the child's conceptualisations about print. Studies of such possible predictive factors in beginning reading should therefore contribute to our understanding of the complex relationship between Reading Readiness and reading ability.

2 a. PERCEPTUAL FACTORS : VISUAL AND AUDITORY DISCRIMINATION

"Perceptual learning is learning to extract the relevant information from the manifold available stimulation".

Gibson and Levin, 1975

PERCEPTUAL FACTORS : VISUAL AND AUDITORY DISCRIMINATION

The Possible Relationships between Perceptual Factors and reading acquisition and progress

The study of perceptual factors possibly related to reading acquisition and progress has featured throughout the research in reading but with varied emphases, through investigations of the nature of the relationship between perceputal abilities and reading achievement, the effectiveness of perceptual training programs to neurophysiological considerations and the effect of regional variations of accent and dialect.

One problem faced by researchers in this field is that some earlier studies involving correlations do not give sample size and/or statistical significance of the correlations, and therefore it is not possible to judge the strength of the correlation.

Bond (1939), Russell (1949, 1956) and Fendrick (1935) suggested a correlation between .5 and .6 between word perception tasks involving visual and auditory discrimination and reading success. Scott (1947) and Bradley (1955) suggested, from the results of long term studies, that perceptual training programmes were found to enable children not considered ready to read to subsequently achieve reading levels equal to other children who were reading earlier.

Other researchers suggested that visual and auditory discrimination abilities were more important than mental age in reading success, with auditory discrimination correlating most highly on the basis of research evidence, Durrell, Murphy and Jenkins (1941); Harrington and Durrell (1955); Thackray (1964, 1871).

However, Nicholson (1958); Olson (1958) and Gavel (1958) claimed that of all readiness measures, knowledge of letter names, which involves both visual and auditory discrimination, provides the best prediction of success in reading.

Thackray (1964) produced correlations with reading progress of .53 for auditory discrimination, .50 for visual discrimination and .47 for general ability. Other studies tended to support Thackray's findings, for example Jaffares and Cosen (1972); Rosner (1973); Kemp (1975).

The Thackray Reading Readiness Profiles, devised to measure the young child's levels of ability of Auditory and Visual Discrimination tasks and his/her vocabulary and concept development, were shown to correlate with reading achievement scores obtained one year later, as shown in Table 1 below, and are therefore considered to have predictive validity.

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Table 1 : Range of Validity Coefficients for the Thackray Reading Readiness Profiles

Profiles	Reading Achievement (Southgate, Schonell and Neale Tests used)
Profile 1 : Vocabulary	.45 - .49
Profile 2 : Auditory Discrimination	.46 - .54
Profile 3 : Visual Discrimination	.48 - .58

Thackray (1971) states: "Research has shown quite clearly that for learning to read successfully the ability to make auditory discriminations is of vital importance". Similarly, "Again research has shown that a vital skill for learning to read successfully is that of making accurate visual discriminations when comparing words and letters".

Thackray also indicates that tests of visual discrimination using non-verbal material do not correlate as highly with later reading achievement as those tests which use letters or words. A positive relationship between perceptual factors and reading progress therefore appears to have been established. However, it would seem that further research is necessary to determine whether other factors, for example the child's conceptualisations about print, correlate more highly with reading

progress. In addition, research would need to assess the relative role or significance of perceptual factors if this was the case.

Perceptual Ability and Perceptual Learning

The relationship between perceptual abilities and perceptual learning seems one which should be explored further. Gibson and Levin (1975) suggest that perceptual learning may be characterised as adaptive to the needs of the learner; active in terms of searching for useful information; selective, and as progressing towards improved differentiation. The learning is therefore purposive at each level. Perceptual learning related to reading would appear mainly to be concerned with distinctive features which are relational and contrastive, and invariants or constant properties. (Research studies using letter shapes appear to suggest, for example, that straight-curved is the first contrast to be learned; the round letters without intersection are separated off at the second level, and curved letters with intersection at the third, followed by diagonality. Gibson, Shapero and Yomas (1968); Lehman (1972)).

Distinctive features also serve to differentiate words. Meltzer and Herse (1969), for example, found that beginner readers in their study did not generally perceive the boundaries of written words as such. Gibson and Levin suggest that the invariant properties of speech and writing are themselves learned through performance; the child's own attempts contribute greatly to learning the critical distinguishing features.

Some studies of aspects of perceptual learning would appear to link perceptual discrimination abilities and concepts about print. Lavine (1972) for example, found that 3 year olds could not distinguish between graphic displays depicting objects and those containing letters, whether or not they were able to name the letter or read the word. Calfee, Chapman and Venezky (1970), found that word-matching and matching letter strings was difficult for beginner readers, whilst Lehman's study (1972), pointed to the importance of ignoring irrelevant information, and attention to task-relevant information.

The above research findings suggest, therefore, the need for further research into the possible relationships between perceptual ability, perceptual learning and learning to read, particularly in the context of the young child's acquisition of concepts about print.

The transfer of perceptual ability to learning for reading

Rosen and Ohnmacht (1968) were concerned to identify the stage at which perceptual abilities transfer into learning relevant for reading well. Starting from the premise that reading ability can be conceptualised as an hierarchically organised set of skills, Rosen and Ohnmacht obtained results which suggested the existence of four congruent factors; these being general reading achievement, perceptual readiness, figure ground perception and specific readiness. However, the findings are limited; no tests of the statistical significance of coefficients of factor congruence being available, cut-off margins were applied. The relevant question raised by Rosen and Ohmacht would appear to be what perceptual factors transfer at

various points in the sequence of events leading to learning to read well.

The answer would appear crucial to our understanding of Reading Readiness and reading progress, and may possibly be revealed in an analysis of the development of the young beginner reader's conceptualisations about print.

Auditory and visual short-term memory measures as predictor measures of reading

In a study of the effectiveness of measures of operativity, language and short-term memory in the prediction of reading and mathematical understanding, Lunzer, Dolan and Wilkinson (1976), made use of auditory and visual stimuli in the short term memory test items and found that when the criterion was comprehension on the Neale test of reading, the strongest predictors were 'Short term memory visual' and 'story recall' (.43), and, moreover, 'short term memory visual' proved to be the third best predictor for word recognition using the Schonell test.

Lunzer, Dolan and Wilkinson state, "The findings relating to STM (short-term memory) are striking. The auditory and the visual tests differed only in mode of presentation and response; both required sequential reproduction. Yet while the auditory STM measures made no independent contribution to the prediction of performance on any of the criteria, the contribution of the visual measures prove highly significant in predicting reading". "STM (visual) contributes significantly to the prediction, and its omission brings about a reduction of R (multiple

correlation coefficient) to .601. Conservation and STM (auditory) contribute not at all". Lunzer et al conclude that their findings support the view that "significant progress in learning to read depends on the ability to discriminate between different sequential orderings of visual symbols and to retain a memory image of such sequences . . . conversely, deviation in the ability to retain a sequence of auditory symbols per se is not critical for reading".

The study of Lunzer, Dolan and Wilkinson (1976) would therefore appear highly relevant to the present study in terms of including and assessing auditory and visual measures as predictor measures of reading, and, by using multiple regression analysis, "computing the best prediction of reading using all of the predictors and then testing the effect of omitting one or more variables from the predictor set", that is, in assessing the role of perceptual factors within the context of a number of other possible predictor variables.

Wepman's modality concept of learning, and test of Auditory Discrimination

Wepman (1968), quotes James' view of intellectual development in terms of substituting a conceptual order for the perceptual order in presenting his modality concept of learning: that an apparent predilection for one sensory input channel over the others seems to exist, "in keeping with the concept first suggested by Charcot, as reported by Freud (1953), that each person has a particular modality of choice in learning, a typology of 'audile', 'visile' and 'tactile' learners". Wepman further suggests that the observed differential modality distinction appears to be related more

closely to the innate capacity of the child than to any determinable environmental factor, and further that generally "the two major modalities, (auditory and visual), seemed to reach a stage of equilization of function by age nine".

Bateman (1967) produced results which suggested that the auditory method of reading instruction was superior to the visual method for both reading and spelling, using an analysis of variance technique ($F = 16.28$, 1df, $p<.01$) and that the auditory subjects were significantly superior to the visual subjects on reading achievement measures ($F = 9.28$, 1df, $p<.01$). Bateman suggests that the research evidence above supports the view that reading is basically a sound symbol association process and should perhaps be taught to all children as such, and moreover, that the auditory method appears to be superior, regardless of the child's own pattern of learning.

The Wepman Test of Auditory Discrimination (1958 revised 1973) was devised as a method of "determining a child's ability to recognise the fine differences that exist between the phonemes used in English speech . . .. The task presented to the child is a simple one. It measures only the ability to hear accurately".

Criticisms of tests of auditory discrimination have been made, for example Hardy (1973) referring to children who have completed their first year of schooling ". . . it appears that the children experience very few phoneme discrimination difficulties, at the level of the individual phoneme. This suggests that . . . factors other than auditory discrimination ability are being measured and exaggerated estimates of auditory discrimination

difficulty are being made". Similarly Blank (1968) suggests: "A variety of complex processes are involved in what appears to be simple perceptual discrimination". From her study of fluent readers, Clark (1976) proposes that their success on the task of discrimination of like sounding words should be viewed in a context of language development rather than as an indication of developed auditory discrimination per se. Clark concludes: "It can no more be said that good auditory discrimination is the cause of their success in learning to read than that their auditory discrimination can be explained away as resulting from their reading skill. It is yet further evidence of the awareness of these children who are fluent readers of the discriminations which are of significance in the language context in which they are rapidly developing such fluency".

The relationship between reading progress and auditory discrimination ability, particularly as defined by tests of such, appears therefore to be a complex one which requires further investigation, particularly in reference to other factors which may be significant in early reading acquisition and reading progress.

Tests of visual discrimination and visual perception

Tests of visual discrimination and visual perception, such as that of Daniels and Diack, and the Marianne Frostig Developmental Test of Visual Perception (1964) were devised to isolate and evaluate visual perceptual abilities thought to be involved in the process of recognising and discriminating stimuli. Subsequently training or remediation programmes could be appropriately applied, with the intention of correcting

"developmental imbalance" by using teaching methods to improve the most deficient abilities.

Frostig (1964) suggests that while deficits in visual perception are rarely the only cause of reading failure, they seem likely to be one of the most important contributing factors. Graubard (1966) found for example, that deficits in the visual-motor channel occurred more frequently than deficits in the auditory channel; and Weintraub (1967) found that visual perceptual deficits had more bearing than auditory perceptual deficits on difficulties in reading up to the third year of formal reading instruction.

Perceptual skills training programmes

Research in the area of perceptual factors relating to reading has frequently focussed on assessing the success of perceptual skills training programmes on reading progress; whether training in perceptual skills could positively affect reading achievement.

Early research findings tended to be inconclusive. Lineham (1958) and Durell and Murphy (1953), suggested that training in the skills of visual and auditory discrimination improved reading achievement. Whilst Scott (1947) and Bradley (1955-6) suggested that the child's development of readiness could be accelerated by perceptual training, Benda (1954) and Hymes (1958) produced results which suggested the opposite. Taylor (1950) however, had concluded on the basis of research evidence that Reading Readiness could be affected by training and is not solely dependent on maturation.

Thackray evaluated the evidence and suggested that the extent to which the perceptual abilities may be developed through training had been underestimated. However, Thackray (1971) concluded that "reading as a meaningful task requires more than competency in perceptual abilities". Later studies of perceptual training programmes tended to suggest that a training programme produced improved scores on related tests and sometimes produced improved Reading Readiness scores. Bailey (1979) for example, found that although the training programme significantly improved the performance of the experimental group over the control groups on a total auditory perceptual test, there was no corresponding improvement in reading, on word recognition or comprehension tests.

Other studies appear to indicate that perceptual and perceptual-motor practice that does not utilize verbal symbols is of doubtful value for reading, e.g. Harris (1976). Harris suggests that if such research findings were widely known the effect on primary school practice in reading would be substantial.

The research evidence regarding perceptual training programmes and their effect on reading achievement appears to suggest that whilst the child may become more proficient in the perceptual skill itself, contribution to reading progress is insignificant in most cases.

This would seem to highlight the relevance of investigating the relationship between perceptual factors and perceptual learning, and to support both the concern of Rosen and Ohmacht to identify the stage at

which perceptual abilities transfer into learning relevant for successful reading, and the concern expressed by Goodman (1972) and Clay (1971) that reading be taught as a meaningful process and not as a set of apparently unrelated skills.

The development of listening skills

The relationship betwen listening skills and reading skills appears to be little understood, for while improvement in some listening skills may improve some reading skills, there may be areas of reading and listening which are probably not closely related. However, Way (1973) emphasises the importance of teaching listening skills: "Listening, or the ability to listen discriminately, is one of the most important communicative skills". This would appear to be supported by the later findings of Wells (1982) and Jones (1984) reported in Section B2 on the value of reading story to children in the development of "symbolic skills".

Listening, as a communicative skill could therefore be regarded as a more complex activity than that of making perceptual discriminations, although, as previousiy indicated, the latter is less simplistic than often assumed. It would therefore seem appropriate to monitor the child's ability and skills in listening to story as an indication of the possible development of symbolic skills.

The possible effects of accent and dialect on discrimination abilities

Trudgill (1975) has indicated the possible effects of accent and dialect on auditory discrimination ability, and to a lesser extent on visual discrimination ability, through differences in pronunciation, and through grammatical variations as well as differences in vocabulary and/or pronunciation.

Trudgill associates these factors with the documented "underachievement of the working class child", through "a conflict between the language of the teachers and the school on the one hand and the language of many children on the other" producing negative attitudes to reading.

A possible interaction of neurobiological and environmental factors associated with reading achievement has also been proposed: Benton (1975, 1978, 1982); Duane (1983); leading to a suggestion that "there may be physical and physiological reactions in the brain to the environment" Duane (1983).

It would seem appropriate, therefore, to consider the possibility of effects of such factors on the discrimination abilities of the young beginner reader, and their influence on reading progress.

The possible shift from visual cue processing to phonetic cue processing in early reading

The research evidence outlined so far in this section would appear to suggest the complexity of the relationship between perceptual factors and reading acquisition, and to lead to the crucial question for educationalists, as posed by Rosen and Ohmacht (1968) regarding when and how these perceptual abilities transfer to learning. Recent research by Ehri and Wilce (1985) outlined below, attempts to address this question.

Following Mason's (1980) longitudinal study to follow prereaders into reading, observations of which suggested 3 hierarchical stages to reflect the different processes being used to identify written words: context dependency (least mature), visual recognition and leter-sound analysis, (most mature, enabling the accurate decoding of unfamiliar printed words) Ehri and Wilce (1985) suggest, on the basis of experimental evidence, that when children move into reading they shift from visual cue processing of words to phonetic cue processing. This, Ehri and Wilce suggest, entails recognising and remembering associations between letters in spellings and sounds in pronunciations. This learning mechanism might possibly explain how children first become able to read single words reliably. The proposal by Ehri and Wilce (1985) places further emphasis on the importance of the child's conceptualisation of the relationship of speech and writing, and of both as meaningful forms of communication, thereby linking perceptual factors with concepts about print. The study by Ehri and Wilce (1985) therefore seems to make an important contribution to our understanding of

SUMMARY

A review of research into the role of perceptual factors in Reading Readiness and reading progress illustrates the complexity and diversity of these factors and the complexity of their relationship with reading achievement. Research evidence suggests that teachers should make more precise observations of the child's perceptual abilities in order to facilitate success in learning to read. However, whilst a positive relationship between perceptual factors and reading progress appears to have been established in earlier studies, for example Thackray (1964, 1972), it would seem more profitable to analyse the relative role of perceptual factors in conjunction with other factors considered relevant to success in early reading, for example print-specific skills and concepts about print.

Studies of the relationship between perceptual abilities and perceptual learning would appear to be highly relevant to a reassessment of the Reading Readiness concept, particularly the suggestion by Gibson and Levin (1975) that perceptual learning may be characterised as adaptive to the needs of the learner, learning being purposive at each level. In the context of learning to read, the child's concept of the purpose and relevance of the perceptual learning task would appear to be relevant. The stage at which perceptual abilities transfer into learning for successful reading may therefore be within the development of the beginner reader's conceptualisations about print.

Whilst some research evidence supports the modality concept of learning, for example Wepman (1968); Bateman (1967), and Bateman's (1967) suggestion that the auditory method of reading instruction is superior to the visual method the relationship between reading progress and auditory discrimination ability, particularly as measured by tests, appears to be complex and little understood. Moreover, some tests of perceptual discrimination abilities, for example the Wepman Test of Auditory Discrimination, have been criticised for their simplistic view of what might be a variety of complex processes involved in the testing task.

Research evidence regarding the effectiveness of perceptual skills training programmes suggests that these may improve scores on related tasks but often fail to effect reading achievement. This would seem to support the case for further investigations into the relationship between perceptual factors and perceptual learning relevant for successful reading, and calls for a reassessment of pre-reading and early reading activities in favour of perceptual learning in reference to print-specific skills.

Recent research has suggested the importance of developing the child's listening skills, where listening is regarded as active and communicative; through listening to story symbolic skills may be developed. This further directs perceptual learning towards print-specific activities and concepts.

The possible effects of accent and dialect on discrimination abilities have been investigated by Trudgill (1975) suggesting that such factors should be considered both during the early stages of learning to read and throughout the subsequent stages of reading development.

The research findings of Ehri and Wilce (1985) suggest that transfer from pre-reading into reading is characterised by a shift from visual cue processing to phonetic cue processing, by which the child possibly learns to read single words successfully. This study would seem to contribute significantly to the field, linking perceptual learning with concepts about print through focussing on the relationship of speech and writing as communication systems.

The relationship between perceptual factors and both Reading Readiness and reading progress appears, therefore, to be complex. The case is presented for further research into these possible relationships, particularly in the context of the young child's acquisition of concepts about print.

2b. THE INTELLECTUAL FACTOR

"The intellectual life of man consists almost wholly in his substitution of a conceptual order for the perceptual order in which his experience originally comes".

William James
(Essays in Radical Empirecism)

The relationship between Intelligence and Reading Ability

The intellectual factor received much attention in the early studies of Reading Readiness, particularly as it gave rise to the minimum mental age controversy. Early research findings indicated slight positive correlations rarely exceeding .2 and not statistically significant, Gates (1924); Olson (1940); Schonell (1961). General intelligence could be viewed as a sampling of many different abilities variously related to learning to read. Vernon, MD (1957), defined intelligence as "reasoning ability", and suggested that reading involves a particular type of reasoning process termed "cognitive clarity". Failure to develop adequately this specific reasoning process resulted in "cognitive confusion", which Vernon attributed to be the chief symptom of reading retardation in older children and to describe the normal state of the young beginner reader, regarding understanding of literary functions.

Vernon PG (1961) suggested that together with the general factor of intelligence, g, the major group factor 'V:ed' (the verbal-numerical-educational factor) is of greatest importance in determining reading ability.

The relationship between intelligence and reading ability was hypothesised, as general intelligence implies the ability to learn and to apply knowledge, and reading is a thinking process which involves learning.

Thackray (1971) states that the correlations of general intelligence and reading achievement in the early studies were found to range from .35 to .70, with an average of .6, but Thackray does not reveal the source of this information. His own investigation in 1964 produced a correlation of .47, lower than for both auditory and visual discrimination abilities.
Durell (1933) and Inglis (1949) stated that common elements existing in intelligence and reading tests must be recognised in any interpretation of results. However, many early investigators claimed mental ability as the most important single factor in determining reading progress, McLaughlin (1928); Raybold (1929); Tinker (1932); Hayes (1933); a claim to be supported later by Malmquist (1970).

This seemed to suggest that a basic requirement for beginning reading should be a specific mental age, and that reading instruction should be postponed until this mental age was reached. This view of Reading Readiness remained influential among researchers for some time and was crystallised in the study by Morphett and Washburne (1931) who reported " . . . the children who had a mental age of six years and six months made far better progress than did the less mature children and practically as satisfactory progress as did the children of a higher mental age", and concluded that reading instruction be postponed until a mental age of six years six months was reached. Various mental ages of six, and seven years were also advocated: Bigelow (1934); Witty and Kopel (1936); Dean (1939). Gates (1937) however, found that the correlation between mental age and reading progress was highest in classes with the best instruction, r = .62, and concluded "The magnitude of the correlation seems to vary directly with the effectiveness of the provision for individual differences

in the classroom".

Intelligence and Young Fluent Readers

Work by Margaret Clark (1976) with young fluent readers serves to widen the discussion of the relationship between intelligence and reading ability, not only in view of the research evidence but also in terms of the methodological considerations which must be faced by researchers in this field, particularly relating to choice of intelligence testing procedures and materials.

Clark found that of a group of children who were already able to read when they started school, most were found to be of above average intelligence and on the Stanford Binet Intelligence Test most scored at a level at least two years in advance of their actual age.

As Clark points out, however, interpretation of such results must be cautious: "intelligence tests are being questioned as measures of innate ability and the extent to which they are a combination of innate potential and environmental enrichment must be considered". Clark reports that in some pre-school studies the Stanford Binet Intelligence Test has been used to measure the effectiveness of the programme.

Other studies have indicated the variability of IQ scores under different testing situations and conditions, for example Hunt (1961); Zigler and Butterfield (1968); Cazden (1970); Stanley (1973).

Clark points out the limitations of different measures of intelligence. For example, when using the Stanford Binet Intelligence Test, it is difficult to make other than global comparisons, whereas the Wechler Intelligence Scale for Children has separate verbal and performance scales, thus providing verbal/performance discrepancies and sub-test profiles in addition to the Full Scale Intelligence Quotient, as does the downward extension of the WISC, namely the Wechsler Pre-School and Primary Scale of Intelligence WPPSI, covering the age range four to six and a half years, which Clark used in her 1970 study. However, Clark suggests weaknesses exist in the Wechler Tests themselves ". . . there is a weak link around six to seven years of age, which in Britain is often a crucial age for assessment".

Clark's findings in the study of fluent readers, suggested that the tendency was for verbal IQ to be higher, whereas in her study of poor readers (1970) the tendency was for performance IQ to be higher. Clark suggests that it would be mistaken to use high level of intelligence as the explanation for early fluent reading, and that a more profitable approach might be to consider the environmental characteristics, which, interacting with potential skills have assisted "prococious development". Clark states in reference to young fluent readers: "It seems more appropriate in the light of recent researches in this area . . . to consider their early reading as one offshoot of their developing language skill. It is, in short, one of the ways in which these children extend their experiences". This view would appear to reflect the recent research trends to study the linguistic awareness and concepts of reading of the young beginner reader, as discussed in Section B2, and to be a departure from the earlier

suggestion of a causal relationship between mental ability and reading progress, as outlined above.

Inherent problems in standardised testing of intelligence

Furthermore, a recent study by Yule and Rigley (1982) on predicting future reading attainment from the WPPSI, has suggested a possible discrepancy implicit in different testing procedures. For a sample of 150 children who had been tested on the WPPSI at five and a half years of age, who were subsequently tested on group and individual reading tests at ages seven and eight, correlations of approximately .6 were obtained with group tests of reading, but only low correlations were found in the sub-sample tested individually on the Neale test. These findings relating to intelligence therefore tend to be inconclusive.

Detterman (1982) like Durrell and Inglis before him, suggests that higher order constructs like general intelligence inevitably result when complex systems involving many interrelated components are studied, and are of little help in explaining the processes involved.

Similarly, Stanovich et al (1984) in a study of intelligence cognitive skills and early reading progress, found that the hypothesis that reading is strongly related to general intelligence once differences in decoding ability have been accounted for was not supported. However, the interrelationships between the various sub-skills of reading and intelligence increased with age, probably due to "mutual facilitation", that is "any intelligence-achievement correlation is probably characterized

by reciprocal causation". Stanovich et al (1984) conclude "It appears that our understanding of early reading progress will not be enhanced by substituting notions of general intelligence for a process analysis of individual differences in reading ability".

The Goodenough-Harris Drawing Test

"The Goodenough-Harris Drawing Test (1963) does not yield a score that is identical with the IQ derived from a well-administered intelligence test", although the correlation between an individual intelligence test result and the Drawing Test score is said to be quite substantial for children between the ages of five and ten, Harris (1963). The drawing test provides a measure of intellectual maturity, and may supply evidence of severe intellectual and conceptual retardation.

The content of the Drawing Test is different from the usual intelligence test, as the child's drawing reflects his/her concepts which grow with his/her mental level, experience and knowledge (rather than indicating "patterns of ability" as derived from discrepancies between test scores on the usual intelligence tests).

Such a measure of the intellectual factor or general intellectual ability would seem appropriate in a study of Reading Readiness and early reading progress.

SUMMARY

The intellectual factor has featured predominantly in many studies of Reading Readiness and progress in reading, from early studies where slight positive correlations were found, through research related to the minimum mental age controversy where a causal relationship was thought to exist between mental ability and reading achievement, to more recent studies which tend to support the "reciprocal-causation" theory as suggested, for example, by Stanovich (1984) in which intelligence-achievement correlations are probably mutually facilitated.

Vernon's (1957) definition of intelligence as "reasoning ability" underlied the 'cognitive clarity' and 'cognitive confusion' concepts, used to describe the nature of beginner reader's knowledge and understanding of the functions of reading and writing; concepts which have contributed significantly to our understanding of Reading Readiness and progress in early reading.

Thackray (1964) obtained a correlation value of .47 between general intelligence and reading achievement; however, the correlation would seem to depend on the type and level of reading instruction and on the effectiveness of provision within the classroom, as well as depending on the assessment measures themselves. Variability of intelligence scores has been well documented, and must be considered in any research study of this factor.

The use of high levels of intelligence to explain success in reading has been described as mistaken by Clark (1976) who has indicated weaknesses in some intelligence tests themselves. It would appear more appropriate to investigate the environmental characteristics which assist success in learning to read, particularly in the likelihood that the factor of general intelligence is present whenever a group of higher-order complex variables are being considered.

Findings relating to the intellectual factor would appear, therefore, to be inconclusive as a result of limited understanding of the involvement of intelligence in complex processes, such as conceptual and perceptual processes, although some such interrelationships have been found to increase with age (Stanovich, 1984).

3. POPULATION VARIABLES CONSIDERED TO INFLUENCE READING READINESS AND EARLY READING ABILITY

a. THE LEARNING ENVIRONMENT : THE HOME, THE SCHOOL AND WIDER CONSIDERATIONS

Social Class and related sociological factors

The influence of Social Class on reading attainment has been well documented.

Where some early researchers investigated home-background in terms of economic rather than cultural levels, only slight and even negligible relationships were found: Anderson and Kelly (1931); Ladd (1933); Fleming (1943).

More recent research findings concerning the relationship between social class and success in reading e.g. Durkin (1966); Smith (1975), and social class and language, e.g. Bernstein (1973); Downing, Ollila and Oliver (1977), however, suggest that this variable should be considered in any study of reading ability.

A shift in the concept of "Social Class"

Where as in much early research fathers occupation has been regarded as the main factor in determining Social Class, according to the Registrar General's social groupings, more recent studies have indicated the importance of other related sociological factors which may or may not be directly attributable to Social Class, but which may significantly affect the social environment of the child. Such factors may influence the child's understanding of the activities of reading and writing, and his/herreadiness for reading, e.g. level of literary in the home, Clark (1976); length of time spent in full-time education and involvement in

further education of the parents and family size and position of the child in the family. Plowden (1967); Bullock (1975); Wells and Raban (1979); Ingham (1981).

The reading instructional environment of the child

It would therefore seem appropriate to associate Reading Readiness and progress in reading with the "reading instructional environment" of the child, namely the learning environments of home and school.

Considering research studies by Durkin (1967) which indicated that some children were entering school already reading, a fact not identified by the readiness tests, Nurss (1979), advocates a rethinking of the concept of readiness away from a product resulting from maturation towards "a process evolving as children interact with their environments".

Wanat (1976), suggests that readiness programs ought to be concerned with modifying the learning environment, not just the learner, and that the focus of the concept of readiness and pre-reading skills assessment has changed to "the reading instructional environment", which involves home and school. It would therefore seem appropriate to obtain some measure of the relative influences of home and school on early reading success.

Conflicting evidence regarding relationship between conceptual development and socio-economic background

Downing, Ollila and Oliver (1977) hypothesised that conceptual development is greater among higher socio-economic children and that it is correlated with perceptual measures of reading readiness. High, middle and low socio-economic groups were used. Their findings suggested that the children in the high socio-economic schools scored significantly better than children from the other shcools on cognitive tests on initial testing (October), but no significant differences were found among the socio-economic groupings on two of the three cognitive tests carried out seven months later. Therefore the advantage of superiority in initial test performance of children from high socio-economic schools was not maintained over time and did not predict future levels of attainment.

However, Lunzer, Dolan and Wilkinson (1976) found significant differences in scores according to socio-economic groupings, where these groupings were arrived at in terms of privileged school catchment areas (socio-economic group 1), underprivileged areas (group 3) and an intermediate group (group 2) on measures of conservation, operativity and language. The highest socio-economic group children achieved superior means on all these predictor measures. Whilst differences in teaching styles of the different schools may be more influential than actual socio-economic groupings in the above studies it would seem appropriate to further investigate the differences in performance on reading and reading related tasks of children from different catchment areas.

Analysis of Catchment Area

Wells and Raban (1979) also rated schools in terms of catchment areas by obtaining information on the nature of home ownership or otherwise, on the types of occupations of the majority of fathers of the children attending the school, and on the mobility of families in and out of the area. They report "As has been found in previous studies, there was a low but significant correlation between catchment area and attainment in reading". $r = 0.232$ ($p<0.05$). Local Education Authority Social Priority Ratings were also obtained for the schools, these ratings being reportedly based in this instance on housing amenities in the catchment area, percentage of free school meals, and percentage of Group II socio-economic group occupation (Registrar General's grouping) as calculated in 1973. The use of catchment area as a broad classification of learning environment would therefore seem appropriate.

The importance of the level of literacy in the home and the child's knowledge about literacy on entry to school

Wells and Raban (1979) collected additional information relating to characteristics of the home judged to be relevant to the task of learning to read, by means of interviews with the parents, and also relating to characteristics of the school, by means of interviews with the Head and class teachers. The findings of Wells and Raban suggested that, of all factors considered from home and school, level of attainment in literacy at age 7 was most powerfully predicted by the child's academic readiness for school, and specifically by his/her knowledge about the activities of

reading and writing. Moreover, "differences between schools and classrooms in their provision, patterns of organisation and quality of teaching, although not unimportant, fail significantly to change the relative level of attainment that is predicted by individual differences between children in their knowledge about literacy on entry to school". These differences between children were found to be predicted by the quality of parent-child verbal interaction and parental interest in literacy in the pre-school years. In a study by Moon and Wells (1979), whilst attainment in reading at age 7 was found to be strongly predicted by knowledge of literacy on entry to school, and this in turn to be predicted by parental interest in literacy and quality of verbal interaction with the child during the pre-school years (.79 Reading Accuracy: Neale; .78 Reading Comprehension: Neale; .70 Carver, $p = 0.1$), the child's own pre-school interest in literacy was not found to be strongly associated with later success in reading. (The correlations with the child's interest interview score being as follows: Reading Accuracy .28, Reading Comprehension .20, Carver .38; non-significant at .05 level). Moon and Wells conclude that the evidence indicates that parental practices are even more important in accounting for children's progress in reading during their first two years in school. "These start with the quality of verbal interaction between the mother and the child and the parents' interest in and promotion of activities connected with literacy before the child enters school. By the time the child starts school he is knowledgeable about books and reading and this becomes predictive of later success with reading. During the first two years at school, parental provision of resources for the development of literacy continues to contribute to his success".

These studies therefore indicate the crucial role of parents during the pre-school and early school years in determining the child's future success in reading.

The effects of social disadvantage on reading progress

Wedge and Prosser (1973) defined social disadvantage in terms of family composition plus low income plus poor housing. Tests in reading at age eleven showed the disadvantaged child, as defined above, to be on average 3½ years behind non-disadvantaged children in their reading scores. However, no single factor showed differences among the disadvantaged children and not among the non-disadvantaged, therefore being disadvantaged does not of itself explain why children do less well". Whilst current statistics of "socially disadvantaged" children are at present unobtainable, it would seem likely that the incidence of social disadvantage would merit further consideration in terms of its possible effect on reading progress. Research is required, therefore, to identify where possible particular factors associated with social disadvantage which may cause reading disability, and, similarly, to investigate whether correlates exist for the non-disadvantaged reading-disabled child.

Sociological and sociopsychological factors and success in reading

M. M. Clark's study of Young Fluent Readers (1976), showed, in reference to early experiences and home background, that a diversity existed with regard to size of family, place in the family, parent's occupation and other such characteristics of the study group.

Addressing the specific subject of Social Class, Clark writes "Social Class is frequently quoted as an important variable in defining the status of the home or the likely attitude to education. Recently, however, the importance of considering the length of schooling of the parents and particularly the mother's further education or training has been appreciated". Clark's findings indicated that few of the mothers of the fluent readers had married early and most had some employment and often additional training before marriage. Books appeared to form "a fascinating part of their life and a shared experience".

On the issue of Social Class, Clark concludes "The richness of support for education which these . . . families were providing was not measurable on scales such as social class, father's occupation, mother's education, or even number of books in the home . . .. The lesson was a clear one that it is crucial to explore the parent's perceptions of education and the support and experiences they provide by measures far more sensitive and penetrating than Social Class, father's occupation or even education of the parents".

The study by Iverson and Walberg (1982) on home environment and school learning tends to support Clark's views expressed above. Their analyses suggest that ability and achievement are more closely linked to the sociopsychological environment and intellectual stimulation in the home than they are to particular socio-economic status indicators. Similarly, Wells (1982) suggests that it is differences in style of interaction within the family rather than position of the family within the social hierarchy as such that are important in accounting for children's differential success in the development of linguistic abilities. Regarding the quality

of linguistic interaction at pre-school level, Wells (1982) states: "We need to find out a great deal more about what influences the ways in which adults and children talk to each other, and why some examples of interaction seem to be so much more successful than others". Where oral language is regarded as an effective means of communication, written language may be similarly regarded, and concepts about print developed in the process.

Sociological factors in a study of avid readers

Ingham (1981) was concerned with sociological and reading related factors associated with "Avid" and "Infrequent" readers, these groups being established by a variety of measures including observations and interviews with parents and children.

Ingham found that the parents of avid readers spent longer in full time education than parents of infrequent readers, and also that several parents of avid readers were involved in further education, whilst none of the parents of infrequent readers received any education after they left school. The avid readers belonged to smaller families and were usually the first born or an only child. In addition, the occupations of the parents of avid readers tended to be skilled and to involve responsibility, whereas those of parents of the infrequent readers were more likely to be unskilled. The avid readers were found to have far more books available in their homes than did infrequent readers, and their parents were more likely to belong to public libraries than were the parents of the infrequent readers. The qualitative finding that "the majority of infrequent readers

did not have books at home; some parents made it quite clear to their children that they did not think money spent on books was money well spent" would appear to support Clark's view of the importance of analysing characteristics or factors of the homes which produce successful readers. It would appear equally important to identify those factors which place the child at risk in terms of reading.

Home and School correlates of voluntary reading

Morrow (1983) in an attempt to understand the development of a voluntary reader through the study of the characteristics of young children who show a particularly strong interest in books (observing that Greaney, 1980, found tha fifth grade students spent only 5.4% of their leisure time engaged in reading, and 22% did not read at all) found significant differences between high and low interest groups in many areas including children's free-time home activities, parental characteristics and activities, and quality of the "in-classroom literary environment". For example the parents and teachers of the higher interest children were found to provide supportive literary environments at home and in school whereas those in the low-interest group did not. Also parents in the high-interest group checked reading as a leisure time activity significantly more often than parents in the low-interest group, $p<.001$.

Whilst Irving (1980) reports that the teacher can play an important role in stimulating voluntary reading in children, Morrow suggests that, on the basis of the results of the above study, teachers need support from the child's home environment to succeed in this role, and that it is therefore

important to establish early cooperative efforts between home and school to create a systematic, integrated programme for developing "recreational" readers.

The transition from pre-school pre-reading to reading at school: discontinuity leading to possible reading difficulties

The research findings of Hubbard and Salt (1975) concerned with the relationship between family characteristics and attitudes and the child's pre-school and early school experiences related to reading, indicate a crucial period of transition from pre-school to school attender in influencing level of success in early reading. At the pre-school stage they observed "'reading' had become part of the regular rhythm of the child's life: . . . pre-reading had become an integral part of the child's socialization in the family environment".

However, Hubbard and Salt identified factors considered to be associated with poor reading progress, factors of discontinuity and frustration, experienced soon after the child's entry to school: "The initiation of the child into reading at school appeared to be accompanied by a significant fall in active emotional support in the home", but apparently not a deliberate or conscious one.

A shift in emphasis was observed in the family's concept of 'reading' away from ideas associated with a pleasant social activity "to ideas of a more functional nature where elements of competition were evident". Moreover Hubbard and Salt further suggest that these observed discontinuities

existed in a time dimension, between pre-school and infant school; in a spatial dimension, between home and school; and in a value dimension: "for the child a whole new complex of attitudes to pictures and print came into existence as the 'real business' of reading began".

The study by Hubbard and Salt (1975) appears to represent a shift away from a separatist view of factors influencing reading progress, in terms of home factors and school factors, to an "interactionist" view of the learning environment. This is particularly apparent in the recommendations made by Hubbard and Salt as follows: for school to "postively encourage the family's emotional support in the widest possible way and to ensure that it is maintained to the optimum point beyond the pre-reading stage"; and the development of reading materials "designed to encourage the extension of socialised as opposed to isolated reading".

Thus the question of Reading Readiness enters a new dimension, as the dynamics of the transition from pre-reading to reading are investigated within the context of personal and emotional factors.

Collaboration between home and school

As the home and school constitute the main learning environments of the child, interaction or collaboration between home and school might be considered advantageous in the promotion of success in reading, as recommended by Hubbard and Salt (1975); Lange (1978); Tizard et al (1982).

Lange (1978) suggests the importance of informing parents of the local reading programme, involving parents in the programme and maintaining their involvement by increasing the levels of interest in literacy within the school catchment area.

Tizard, Schofield and Hewison (1982) investigated the effects of parental involvement in the teaching of reading, on the basis of previous findings Hewison and Tizard (1980) that in working class families, children whose parents reportedly heard them read at home achieved higher reading attainment at age 7 and 8 than children who did not receive this parental help.

Chi-square tests revealed that the distribution of the children across categories was significantly different for the experimental and control children from the two parent involvement schools (χ^2 = 18.77, df = 3, $p < 0.0003$) but not for the groups from the extra teacher help schools (χ^2 = 3.58, df = 3). In addition, parental help was found to both reduce the proportion of failing readers and to increase the proportion of able readers, whilst "the lack of significant effect for the extra teacher help children appears most evident in the lowest attainment band".

Whilst acknowledging the limitations imposed by their adopted research design, Tizard, Schofield and Hewison suggest that their findings provide evidence of a causal relationship between parents hearing their children read and reading attainment.

A study by Hannon and Cuckle (1984) of current school practice regarding the involvement of parents in the teaching of reading suggested that an apparent lack of school commitment existed in home-based parental involvement in the teaching of reading. These findings would appear significant in view of those Hubbard and Salt (1975) and to have relevance to the development of Reading Readiness and reading progress in terms of purposive shared reading.

The school factor : length of time in school

That school is instrumental in affecting childrens progress must be a fundamental educational premise, which finds support in the study by Rutter et al (1979).

As Wedge and Prosser state, it is known that starting at school before the age of 5 rather than after it is associated with higher achievement at 7. (LEA Psychological Service Report, 1985).

Recent findings have indicated the importance of length of time in school, where children starting school in the Summer Term as "Easter starters" are at a significant educational disadvantage. Such factors should therefore be considered in any study of possible predictive factors in beginning reading.

The adoption of the pre-reading approach as a teaching style

Several recent writers advocate that schools should capitalise on and adopt as a teaching style the pre-reading experiences which have generally successfully excited young children about reading. For example, Stanning (1981) who observes that all young children, regardless of background/socio-economic class etc., seem to have a remarkable interest in and love of books, and, moreover, that reading skill appears to be most readily acquired under circumstances which are natural, relaxed and pleasurable: "An enormous proportion of our reading skill is acquired by a process of osmosis". These observations are similar to those made by Clark (1976) and others above, and signify the importance and influence of the unspoken message about reading which is communicated to the young child both at home and in the classroom.

Matching the reading programme to the individual needs of the child

Lesiak (1978) recommends that teachers must implement infant school reading programmes based on a real consideration of individual differences, and suggests that often such "matching" is not achieved: "teachers of young children sometimes feel compelled to use materials, methods and activities designed for older children. In so doing they may impede the development of intellectual functions such as curiosity, critical thinking and creative expression, and, at the same time, promote negative attitudes towards reading".

The research findings of Carbo (1983) support the hypothesis that reading achievement improves when reading programmes match individual learning styles.

An emphasis on reading for meaning in school

The role of the school in promoting and developing "reading for meaning " would appear crucial, particularly in the early stages of reading acquisition, and has been widely discussed in the literature. However, it would seem that many older children fail to read meaningfully, and that many older 'readers' are 'not voluntary readers'. A study by Smith and Feathers (1983) of middle school and high school pupils demonstrates that for most children in the study reading was neither meaningful nor necessary. Smith and Feathers conclude that instructional approaches are required which cast reading in a central and significant role. The above findings of Stanning (1981), and Smith and Feathers (1983), appear to suggest a possible deterioration in attitude and approach to reading as the child becomes older. Moreover, this deterioration may be the result of reading instructional practice.

Nichols (1983) used prediction to increase content area interest and to improve content reading instruction. However, what appears to be advocated by Smith and Feathers is a more fundamental reappraisal of the school's approach to the reading process. It would therefore seem appropriate to investigate this where possible in any study of early reading progress.

The relationship between curriculum scope and reading achievement

The implications of school philosophy and curriculum scope for educational achievement have been considered, for example, the Primary Survey (1978), English from 5 to 16 (HMSO, 1984), The Curriculum from 5 to 16 (HMSO, 1985), the general findings tending to suggest that reading progress and development are best provided for within a broad school curriculum.

In a study of the relationship between curriculum scope and reading achievement, Singer, McNeal and Furse (1984) found that almost all the high reading achieving schools were perceived by their headteachers and teachers as having a broad curriculum, whereas all the low achieving schools were perceived by their headteachers and teachers as having a narrow curriculum.

(A statistically significant relationship was found to exist between a school's score on inferential reading comprehension and the scope of its curriculum $p < .01$, phi coefficient = .67 Number of schools = 12).

The above study would appear to make a contribution to our understanding of the influence of school factors on reading progress, in spite of the limitation that the staff's perceptions of their school curriculum were not analysed in terms of the actual scope of curriculum offered.

Social class, language and linguistic variation

Further factors associated with the school have been discussed by Trudgill (1975) particularly the indications of a large body of educational research that many working-class children are less successful at school than middle class children of equivalent intelligence. Trudgill suggests that a conflict often exists between the language of the teachers and the school on the one hand, and the language of many of the children on the other; and, furthermore, that because of the relationship between language and social class, as discussed by Bernstein, this conflict is usually greater for children from working class backgrounds than for middle class children. Trudgill suggests that possible eductional problems may be connected with linguistic variations and linguistic diversity, specifically accent and dialect. Reading and spelling difficulties may arise, for example, where the teacher is not familiar with the child's accent; alienation from the school and from the activity of reading may occur if attempts are made to change the child's accent or if pressures occur as a result of the accent. Trudgill points out that a subconscious evaluation may be made by the class teacher of children with higher-status accents and dialects as accademically more promising pupils.

Where Standard English is required or rewarded children with regional accents and dialects are immediately at an eductional disadvantage.

Similarly, testing and other assessment procedures of reading often fail to recognise or accommodate the language of the children, as do many of the reading books and materials themselves reflecting the principle that a middle-class way of thinking or doing things is right and should be adopted. However in recent years great efforts have been made by teachers to reflect cultural and imaginative diversity in the print environment of the beginner reader.

SUMMARY

Review of the literature suggests that it is more profitable to consider the reading instructional environment of the child in terms of home, school and the interaction of these, and their influence on the reading development of the young child, than a more limited view of social class groupings which of themselves appear to contribute little to our understanding of reading acquisition and reading progress.

An analysis of catchment area, and of sociological factors which may significantly affect the social environment of the child and his/her understanding of the activities of reading and writing appears to be a more acceptable approach in recent studies.

Research evidence has clearly suggested that the child's home background can be more important than the school in determining success or failure in reading; moreover, the cultural level of the home has been most often cited as educationally the single most important feature of home background, positive correlations having been found between numbers of books in the home and the child's reading attainment. (Malmquist, 1958; Whitehead, 1972; Ingham, 1981). In this context Reading Readiness may be regarded as a process evolving as the child interacts with his/her environment.

Whilst social disadvantage does not of itself explain low levels of reading attainment, further research into associated factors would seem appropriate, as well as investigations of possible correlates for the non-disadvantaged reading-disabled child. Recent studies, for example, suggest that sociological and sociopsychological factors, such as intellectual stimulation and style of interaction within the family are more closely linked to reading achievement than are socio-economic status indicators. (Iverson and Walberg, 1982; Wells, 1982).

Whilst there appears to be conflicting evidence regarding the relationship between conceptual development and socio-economic background, the importance of the level of literacy in the home, and in particular the child's knowledge about literacy on entry to school, appears to be well supported by research findings (Wells and Raban, 1979): level of attainment in literacy at age 7 being most powerfully predicted by the child's academic readiness for school, whilst the child's own pre-school interest in literacy was not found to be strongly associated with later success in reading. The importance of the parental role in determining the child's future level of success in reading is therefore strongly indicated, particularly at pre-school level.

Recent research has established home and school correlates of voluntary reading, and the importance of early cooperative efforts between home and school to create an integrated reading programme and approach has been supported by experimental evidence.

Of particular relevance to a study of significant factors in beginning reading is the transition from pre-school pre-reading to reading at school. Important research evidence has suggested that discontinuity during this crucial stage of transition often leads to subsequent reading difficulties, and further recommends an extension of socialised reading which characterizes the pre-reading stage rather than a discontinuous shift into isolated reading, which often characterizes the beginner reader in school.

Similarly, recent research findings have suggested the advantages of collaboration between teachers and parents in assisting the child's reading, specifically the gains to be made by home-based parental involvement in the teaching of reading using the same methods, materials and approaches as the class-teacher. Whilst there exists an apparent lack of school commitment to home-based parental involvement, it would seem that reading achievement might be facilitated by home-school collaboration on the child's development of conceptualisations about print and of the nature and purpose of reading, and the development of linguistic awareness.

School-specific factors, such as length of time in school; the approach to the teaching of reading; ability to match the reading programme to individual needs; the importance placed on reading for meaning; and the scope of curriculum offered have all been considered to influence reading achievement, and consequently schools are continually seeking to evolve practices which where possible, will increasingly facilitate success in reading.

However, some researchers have suggested that possible alienation from reading may result from factors associated with school which are less amenable to evaluation and remedy, particularly linguistic variation and linguistic diversity, and specifically accent and dialect. Recently, efforts have been made to redress such imbalances, in attempts to reflect cultural diversity within the print environment.

The learning environment of the child, in reference to learning to read, is therefore multi-faceted and influential on many levels. Whilst it would be an impossible and meaningless task to evaluate all aspects, it would seem appropriate to consider the wider implications of home and school influences and related sociological and sociopsychological factors in any study of early reading acquisition and reading progress.

Issues relating to sex differences and reading have been researched widely in recent years, not only in terms of differences in reading readiness and reading progress of boys and girls, where the evidence tends to be inconclusive, but also in terms of cultural and environmental effects relating to gender, and of school practices and sex stereotyping. Consideration of these issues would therefore seem appropriate to the present study of possible predictive factors in beginning reading.

The apparent superiority of girls in Reading Readiness and early reading achievement

Most of the early American investigations of the relationship between boys and girls regarding reading readiness and reading achievement reported that girls showed a certain superiority over boys in the normal school situation, and, further, that boys received remediation of reading disabilities more frequently than girls, this trend also being reported in Britain. Durrell (1940); Monroe (1946); Betts (1948); later supported in the findings of Crosby (1969) and Critchley (1979) in their studies of dyslexic children; and more recently in the research findings of Blatchford, Burke, Farquhar, Plewis and Tizard (1985) that, on school entry, girls were found to have higher literacy and numeracy skills than boys.

Early explanations for the apparent superiority of girls included the suggestion that girls tend to mature earlier than boys physically, intellectually and emotionally, and so may be ready to read earlier than boys, whilst other explanations pointed to the differences in the cultural

pattern which was thought to exist between the sexes, that the sedentary activities of girls rather than the muscular activities of boys were far more likely to foster reading readiness and reading ability: Betts (1946); Gates (1961). Recent findings, for example Blatchford et al (1985) tend to suggest that parental variables, specifically parental teaching of literacy and numeracy at home, and mothers educational achievement, may explain differences in the reading performances of girls and boys where girls were found to have higher literacy and numeracy skills than boys on entry to school. Such a view reflects some current thinking on the relevance and importance of these same parental variables in creating a positive learning environment which promotes success in reading (see Section B3a), and also suggests cultural factors and expectations regarding differential parental behaviour towards boys and girls.

Quoting North-American studies, Downing, May and Ollila (1979) state that most studies using Reading Readiness measures show significant differences in favour of girls over boys, and also that, for children who are able to read, girls generally show superior attainment over boys in the early school years, Dykstra and Tinney (1969); further, as North American children grow older (age 6 to adult) reading related attitudes appear to change in an increasing tendency to identify books and reading as female objects and activities. Downing et al (1979). This may be the result of differing parental and cultural expectations of boys and girls being internalised.

Outside North America the relationship between a child's sex and reading readiness, achievement and attitudes appear to be mixed. Boys have been found to have superior reading achievement in Nigeria, Abiri (1969); in India, Oommen (1973); in Germany, Preston (1962); and in Finland, Viitaniemi (1965); although the Lederle-Schenk study (1975) showed girls to be superior readers to boys in their first year of reading instruction in Germany. Mixed results have been reported in Britain: Morris (1966); Kelmer-Pringle, Butler and Davie (1966). Morris suggested that the content of tests largely determines any observed sex difference.

Downing (1980) concluded that there is a weak trend for girls to achieve better than boys in reading, but that "the difference between the sexes is quite unimportant". Further, in examining the studies in various countries it would seem that few tests of reading achievement and few population samples are strictly comparable, due to possible methodological problems inherent in cross-cultural studies and variety of data collection and analysis.

The variability of findings suggests, according to Downing, May and Ollila (1982) that factors other than genetic and maturational factors need to be considered.

Thackray's findings regarding Sex differences in Reading Readiness measures

Thackray (1964) in an analysis of the separate performances of boys and girls on a variety of Reading Readiness measures and on two reading achievement tests (the Southgate A and the Southgate B), showed the

significant superiority of the girls over the boys in two of the tests of Reading Readiness skills: auditory discrimination, where the difference was found to be statistically significant at the .01 level; and using context and auditory clues, the difference being statistically significant at the .05 level. Auditory discrimination was reported to be common to both skills.

In the vocabulary profile the girls were found to be superior to the boys, the difference being statistically significant at the .05 level and this superiority was maintained on the Kelvin measurement of Ability Test and on the two reading achievement tests, significances ranging from .001 to .025. Thackray reports Morris's (1966) findings which suggested the slight but insignificant superiority of boys on similar measures.

Possible maturational differences between the sexes and differences in reading related abilities

However, arguments for a maturational difference between the sexes had been based on some evidence that girls begin to speak earlier than boys (Moore, 1967; Clark-Stewart, 1973). In 1935 McCarthy reported that boys exhibited more language disorders and that there was a "maturational differentiation between the sexes in verbal performance". However, Maccoby and Jacklin (1974), in a review of many studies of sex differences, conclude "There is so far little evidence for sex-linkage of any of the genetic determiners of other specific abilities such as mathematical or verbal ability".

Relating sex differences in aggressiveness to reading differences, Vernon (1957) suggested that relative reading disability in boys may be associated with emotional difficulties which are frequently aggressive. However, this could not be considered a purely genetic factor, as Dwyer (1973) states, as such observations and trends may be explained equally well by a combination of social and cultural factors.

Research evidence appears therefore to suggest the need to consider cultural as opposed to genetic factors in the study of sex differences and reading, although it would seem that these factors are closely related. Studies by Blom, Frey, Prawat and Jarvis (1980), for example, tend to support the view that boys are more oriented towards a verbally receptive and motorically expressive mode of response, and that this kind of preference could place boys at a greater disadvantage when learning to read. They conclude that the early reading problems of boys may be based on an underlying language functioning difference, rather than deficit. This may be due to either genetic or cultural factors, or both.

Similarly, Downing, May and Ollila (1982) cite a study of male-female sensory differences and reading related tasks, where girls performed better when the material was presented in the auditory mode, but little difference was found between the sexes when words were presented in visual mode (May and Hutt, 1974). Again this may be either genetically or culturally determined, or may result from a combination of genetic and cultural factors.

The Concepts About Print test, and possible sex differences

Day, Day, Hollingsworth, McClelland and Dee (1980) examined the differences in orthographic linguistic-awareness in 4 and 5 year old girls and boys using the Concepts About Print Test, and traced developmental changes in this behaviour through the first year of school. Their results indicated significantly higher total scores for girls, where girls were found to be superior in print direction and letter-word concepts. The developmental findings implied that boys acquire print-related concepts later than girls. However, in a recent study of the first stages of printed word learning, Ehri and Wilce (1985) using analysis of variance techniques with sex included as an independent variable, and n = 30, found no main effects or interactions involving this variable, indicating that males and females did not differ in their performance on the word learning tasks.

Developmental trends in sex differences in reading

The research findings outlined above would appear to support Thompson's earlier summary of the effect of sex differences in reading attainments (1976):

"There is a developmental trend for sex differences in reading attainment of English speaking children, whereby a larger proportion of boys than girls make a slow beginning at learning to read but by 10 years of age population differences between boys and girls are no longer apparent . . .. Unlike socio-economic differences in reading attainment, sex differences do not persist throughout the school years. Sex differences in reading

attainment are present during the initial years of schooling, but are no longer apparent after 4 or 5 years of schooling". Thompson also concludes that sex differences in reading attainment are less than many differences between individuals of either sex, but that it is important for teachers and parents to be aware of these sex differences and the developmental trends associated with them.

Specific cultural factors possibly related to sex differences in reading

Dwyer (1973) and Downing (1980) have reviewed research and literature relative to three specific cultural factors which may explain sex differences in reading: these factors are bias in reader content, negative treatment of boys by female teachers, and cultural expectations of the male sex role. Where the first and second of these cultural factors are seen as specific to school, the third factor is related to the wider learning environment of home, school and cultural influences, (see also Section B8a) and its possible importance may be consistent with findings of studies outlined above, for example, those of Blatchford et al (1985), on superiority of girls in literacy tasks at entry to school.

"Negative treatment of boys by female teachers"

Regarding the "negative treatment of boys by female teachers" hypothesis, the research evidence again tends to be inconclusive. Having reviewed the extensive research on this subject, Downing, May and Ollila (1982) suggest that "the sex of the teacher has little influence on the relative success of boys and girls in learning to read. Similarly, Asher (1977) from a

review of research literature, states that "male and female teachers share common values about acceptable student behaviour, behave similarly toward both sexes, and produce similar achievement with both boys and girls". However, French and French (1984) state that it has been well established that in mixed sex primary classrooms male pupils receive more teacher attention than do females where the sex of the teacher appears to be an insignificant factor. Similarly, Spender (1982) observed "While it has been known for a long time that boys get so much more attention from teachers than do girls . . . few attempts have been made to explain this phenomenon", and Stanworth (1981) concludes that boys are more likely than girls to ask questions, volunteer information and to make heavier demands on the teachers' time. However, the effects of these on Reading Readiness and reading progress appear to be as yet unknown, whilst the effects of cultural influences appear to be given increased consideration in recent writings.

Possible cultural influences leading to gender differences in reading

Dunlop (1982) has pointed out that there are clearly pervasive sex-linked psychological differences, and that as these correlate with biological differences, we cannot assume them to be purely cultural.

A useful distinction, cited by Jonathan (1983) is where 'sex' should refer to biological aspects of male and female existence, whilst 'gender' should refer to all non-biological aspects of differences between male and female such as interests, attitudes, aptitudes etc. However, as Jonathan states, the traditional view of gender formation simply notes sex-linked

differences in dispositon and interest, and expects these to be reflected in educational outcomes.

Moreover, as Dunlop (1982) points out, the issue is further complicated, in that there appears to be no index of when sex-stereotyping is excessive; and, perhaps more significantly, schooling is only one medium of socialisation.

Whilst design and analytical problems would appear to face researchers in this field, it would seem that more research is needed in this area, particularly in reference to the transition stage from pre-reading into reading, and to the cultural, social and genetic influences which may produce sex differences in reading at the various stages of reading development.

SUMMARY

A review of the research evidence regarding sex differences in early reading acquisition and progress has produced inconclusive findings. However, the evidence would tend to support Thompson's view (1976) that whilst sex differences in reading attainment appear to be less than many differences between individuals of either sex, parents and educators should be aware of these sex differences and their developmental trends.

Early American studies have suggested the apparent superiority of girls in Reading Readiness and early reading achievement. However, outside America the research findings have been mixed whilst Thackray (1964) produced evidence suggesting the superiority of girls on the Reading Readiness skills of auditory discriminationa and using context and auditory clues, and on the Kelvin Measurement of Ability Test, the vocabulary profile and two reading achievement tests. Downing (1980) concludes that a weak but insignificant trend exists for girls to achieve better than boys in reading, whilst Thompson (1976) reports that sex differences observed at the early stages of reading acquisition are no longer apparent by the age of 10. The recent finding of Blatchford et al (1985) of the superiority of girls in literacy tasks at entry to school, however, would appear to have particular relevance to any study of possible predictive factors in beginning reading, indicating possible maturational differences between the sexes, in reading related abilities, which may result from the influence of social, cultural and/or genetic factors.

Recent research findings concerning possible sex differences on concepts about print suggested the superiority of girls on print-direction and letter word concepts, whilst a study of printed word learning revealed no significant difference between the sexes. In view of these studies it would therefore seem to be appropriate to further analyse possible sex differences in conceptualisations about print as well as in other related factors considered relevant to reading acquisition and reading progress, such as perceptual and intellectual factors, both at the initial stages of learning to read and throughout the various stages of reading development.

Bias in reader content, negative treatment of boys by female teachers, and cultural expectations of the male sex role have been variously suggested as cultural factors possible related to sex differences in reading. However, the research evidence in these areas tends to be inconclusive, and the need for further investigation is indicated.

Whilst attempts have been made to simplify the genetic-cultural distinction of factors influencing possible sex differences in reading, as for example the sex-gender classification (gender referring to non-biological aspects of differences, for example, interests), these appear to have had limited success. Educational expectations, sex-stereotyping and wider socialisation present methodological and analytical problems for researchers in this field.

Whilst accepting that possible sex-differences in reading may therefore be various and multi-causal, it would seem appropriate to investigate this factor in a study of possible predictive factors in beginning reading.

4. LINGUISTIC AWARENESS, COGNITIVE FACTORS AND THE CHILD'S CONCEPTUALISATIONS ABOUT PRINT : THE RECENT EMPHASIS

"The meeting between child and book is a new kind of encounter", Rosen, 1978.

"Recent research has emphasised increasingly the strong links between linguistic awareness and cognitive development leading to possible synonymous use of these terms". Hunter-Grundin (1981).

Linguistic Awareness is used to refer to the child's ability to think and talk about language, and his/her awareness of the complex and abstract nature of language in various respects.

Whilst at this stage obvious caution must be applied, it would seem to follow from the previous statement that as the child's conceptualisations of reading may be closely related to linguistic awareness, success in learning to read may possible depend on the child's understanding of the nature of reading and his/her general 'set' for literacy.

Following Vernon (1957); Vygotsky (1962); Reid (1966), studies of the concepts of reading and of written language of young beginner readers have suggested that concepts of many children on entry to school are vague or erroneous, particularly regarding the purpose of written language and the use of abstract linguistic terminology: Clay (1969, 1972); Donaldson and Wales (1970); Savin (1972); Mattingly (1972); Calfree (1972); Downing (1970, 1975, 1978, 1981); Johns (1981).

An in-depth consideration of these factors would appear to be a fundamental requirement of any study of early reading acquisition, particularly regarding their contribution to the reassessment of the Reading Readiness concept.

Reading: mysterious or meaningful beginnings?

Piaget's theory of the development of thinking

Piaget's (1959) theory of the development of thinking, whilst not addressing itself directly to the child's learning to read and write, has sufficient implications for the learning of these skills, in that at the conventional age for beginning reading the child's egocentric view of his/her environment and his/her experiences are not likely to lead the child to a natural understanding of the purpose of written language. Some of Piaget's notions of perceptual development have been applied to reading with differing degrees of success, for example Elking (1967) and Lunzer et al (1976) (See also Section B2a). It would seem appropriate, however, to consider Piagetian concepts and stages of development in an analysis of factors influencing the child's level of success in early reading.

The concepts of 'cognitive confusion' and 'cognitive clarity'

Vernon (1957) in an international review of research on the causes of reading disability, concluded that "the fundamental and basic characteristic of reading disability appears to be cognitive confusion", which she explained in terms of uncertainty and confusion as to why certain

successions of printed letters should correspond to certain phonetic sounds in words; that is, "the reading disabled child . . . does not seem to understand why written language is what it is."

Similarly the research findings of Vygotsky (1962) suggested the possible importance of the concept of the function of written language.

Reid (1966) in research concerned with learning to think about reading, used structured interviews with 5 year old beginner-readers in a Scottish primary school in an attempt to study the notions about reading of beginner-readers, and how these notions develop over their first year at school. Very little previous research had been carried out concerning children's "technical vocabulary", described as "the language available to them for talking and thinking about the activity of reading itself".

Reid's findings suggested that young beginner readers have quite different concepts to the ones adults tend to take for granted, and confirmed Vygotsky's conclusion that the beginner does not possess the fundamental concept of the functions of reading and writing, in that the children in Reid's study exhibited certain linguistic and conceptual uncertainties, having "little precise notion of what the activity consists in". Specifically what emerged from the first interview, conducted after the child had been attending school for approximately two months only, was "the general lack of any specific expectancies of what reading was going to be like, of what the activity consisted in, of the purpose and use of it, of the relationship between reading and writing, and a great poverty of linguistic equipment to deal with the new experiences (calling letters

'numbers' and words 'names')". Reid (1966).

Downing (1970) replicated Reid's study and drew conclusions which confirmed Reid's earlier findings, in that the normal state of the young child about to learn to read is one of "cognitive confusion" about the basic concepts of language, concepts which are basic for thinking about why people read and how. Downing (1970) suggested that it is only by achieving a state of "cognitive clarity", with respect to the purpose and nature of reading and writing and related linguistic concepts, that the child will succeed in reading. This led Downing and Thackray (1971) to propose the three key factors in Reading Readiness to be visual discrimination ability, auditory discrimination ability and, thirdly, the cognitive development of the special concepts and reasoning abilities which are used in learning to read.

More recently, however, the shift in emphasis away from perceptual abilities towards cognitive and conceptual abilities has been apparent in the concept of Reading Readiness, as, for example, suggested by Ayers and Downing (1982); "Older tests of reading readiness attempted to measure it indirectly through such subtests as letter-name knowledge and auditory discrimination. They reflected older theories of reading readiness". However tests like the LARR and Clay's Sand test (to be discussed below), are according to Ayers and Downing, more direct measures of readiness in that they test and child's comprehension of concepts and language that will be used in learning. They further state "Clearly, children's recognition of reading and writing activities, their concepts of the purposes of literacy, and their comprehension of the technical linguistic terminology

used by teachers in reading instructions must be important in their readiness to profit from such teaching".

The Linguistic Awareness In Reading Readiness Test: LARR

The Linguistic Awareness In Reading Readiness Test (LARR), Downing, Ayres and Schaefer (1983) was devised to provide a measure to determine the strengths and weaknesses of the child in its first year at school, with regard to understanding of the linguistic concepts required for reasoning about the tasks of learning to read, as well as being considered useful for diagnosing gaps in the conceptual development of older backward readers. The theoretical foundations of the test are attributed to the work of Piaget and Vygotsky, whilst the test contents are based on original research by Reid (1966); Downing (1970, 1975); Clay (1972). The key principle underlying the thinking behind the test is that the child must understand the purpose of the reading skill to be acquired. The LARR test was considered to be predictive of the child's progress in learning to read. However, parts One and Two of the LARR test, "Recognising Literacy Behaviour", and "Understanding Literacy Functions", were shown to have lower predictive validity overall than Part Three, Technical Language of Literacy. However, Downing et al (1982) state "There is certainly sufficient information provided to indicate that Test 3 (Technical Language of Literacy) is a useful predictor of reading achievement in grade one as measured by the part scores and total scores of the Cooperative Primary Reading Test. Further studies should confirm this finding with similar reading achievements". Downing et al conclude: "It is expected that with further refinements in the LARR tests which were completed since the first

try-out, the prediction efficiency should be improved". The LARR test utilizes methods of non-verbal responding, such as circling a word, to avoid the possible problems of verbalisation, where a child may have grasped the concept but be unable to verbalise the correct response.

It would appear, therefore, that the LARR* Test itself, and more specifically the thinking which underlies it, is the logical product of much research into the child's linguistic awareness, as outlined in this section, and contributes significantly to the reassessment of the Reading Readiness concept, particularly in its focus on understanding of the technical language of literacy, or concepts about print.

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* This test was made available after the data collection for the present study had been completed.

Clay's analysis of reading as the patterning of complex behaviour, with an emphasis on Concepts About Print

Clay (1972) regards early reading behaviour as characterised by a transition period of learning during which the child's pre-school responses and skills are transformed into new ways of responding, for example in directional behaviour and visual scanning, and new expectations about the links between oral and printed language. The requirement for new learning and new responses creates a "developmental discontinuity" which can only occur when the child is introduced to printed language, and which can only be overcome by the learning of particular reading behaviours. For example, previous learning to recognise the constancy of objects despite their changing visual image must be adapted to recognise that when faced with printed text such flexibility is inappropriate.

Clay (1971) advocates, therefore, the sensitive observation of reading behaviour; "observation of children's behaviour is a sound basis for the early evaluation of reading progress. Children may stray off into poor procedures at many points during the first year of instruction". Clay states that the child often reaches his/her third or fourth year at school before recovery programmes are implemented, by which time the child's reading level is often two years behind that of his/her peers.

According to Clay, a check should be made on significant concepts about printed language, including the front of the book; that print (not the picture) tells the story; what is a letter?; what is a word?; what is the first letter in a word?; big and little letters (upper and lower

case); left to right directionality; orientation; the function of the space; uses of punctuation; all of which are incorporated in the Concepts About Print Test entitled "Sand" (alternative version "Stories"). Clay (1972). The original research group for the test was 320 urban children aged 5:00 to 7:00 in 1968, the test validity stated at .79. The test's greatest value is said to be diagnostic: items should uncover concepts yet to be learned, or confusions to be untangled. This would seem to be compatible with Goodman's (1972) analysis of reading previously discussed, in that concepts about print are directly related to the purpose of reading. This view is supported by Clay's conclusion that it is not self-evident to the child that left-to-right movement along a line, through a book, and across a word are related, and that it is only through working with print, writing own stories, reading and making discoveries about printed texts, that the child slowly consolidates the total network of the relationships.

Chronological development of Concepts About Print

Regarding chronological development of these concepts, research findings, for example those of Elking and Weiss (1967); Moore (1961); Clay (1970, 1972); Johns (1981), suggest that when a child first begins to read English text there is a strong left-to-right, horizontal, directional component to his/her behaviour, and moreover attention being focused on the left ends of lines and of words. After 6 months to a year, letter identity becomes an important cue. The child can discriminate between two similar words on the basis of several letters. Mastery of the set of letter symbols is thought to be gradual, but the lowest 25% of children in Clay's study paid too

little attention to word patterns or features during the first year.

Similarly, Clay observed that 27% of a research group at 5:0 did not detect the inversion of a picture when questioned about it, whilst 4 year olds detected differences in orientation but classified variations as the same. Clay suggests that good readers overcome this tendency sooner than poorer readers as overlooking orientation leads to errors on letters. Clay suggests an age expectation of 5:6 for correct responding to the inversion of print.

Criticisms of the Concepts About Print Test

Following Wells (1979) that the most important prediction of attainment in reading at age seven years was the child's knowledge about the conventions of reading on entry to school, and not differences in oral language ability, Hartley and Quire (1982) decided to assess the efficiency of Clay's Sand Test in determining the abilities of children in these crucial areas. Their observations suggested confusions inherent in the test with reference to the nature and purpose of the testing situation itself; problems with individual items which were eliminated in subsequent re-presentations; further linguistic confusions and a failure to take into account the child's limited communicative skills. Hartley and Quire's main criticism is directed at what they consider to be a major dichotomy within the test in the inclusion both of concepts which can be acquired before a child begins to read and concepts likely to be acquired only when mastery of reading is underway. They suggest that in the interests of clarity, only those items that a child could acquire before be begins to read should

be included in the test. They advocate a shift of emphasis away from item failure leading to specific teaching towards increased guidance on how to help children acquire the essential concepts at the appropriate stages.

However, the test would appear to provide a direct measure of the child's comprehension of concepts and language to be used in future learning, as suggested by Ayers and Downing (1982), and, appearing to be the best measure of its kind available, would therefore seem to be of value in a study of possible predictive factors in beginning reading. Moreover, an attempt was made within the present study to meet, in part, criticisms of the Sand Test made by Hartley and Quire (1982) in reference to possible problems of verbalisation, by devising a parallel non-verbal test.

Recent studies of the child's concepts about print and the nature and purpose of the activity of reading

Following Downing's (1977) emphasis that understanding should be considered a key factor in raising standards of literacy, through teaching young children an understanding of their own language processes in speaking, listening, reading and writing, Downing et al (1978) studied the conceptual and perceptual factors in learning to read in kindergarten children, employing a structured interview technique based on items similar to those used by Clay (1972) in the Sand test. The areas under investigation were recognition of acts of reading and writing; concepts of the purposes of reading and writing; concepts of features of printed materials; and visual perception. Whilst most of the children achieved near perfect scores on the visual perception items, those concerned with concepts of

features of printed materials proved to be the most difficult.

As previously stated, using the LARR test, Downing et al (1983), the child's knowledge of the technical language of literacy was found to be a useful predictor of reading achievement (r = .46 to .79 with significance levels between .01 and .003) whilst the findings relating to the child's understanding of literacy functions and recognition of literacy behaviour were inconclusive at that stage of test development (whilst suggesting that these tests should be retained in the battery), Ayers and Downing (1982). Downing et al concluded that the young child's understanding of the functions and features of written language can not be taken for granted, and that to leave the development of these concepts to chance would be hazardous. The role of the reading teacher in facilitating the development of these relevant print-specific concepts and skills is therefore strongly implied.

Some other studies have combined the child's understanding of the concepts about print with the interview technique established by Reid (1966) to determine the child's understanding of the nature and purposes of the activity of reading itself. In Johns' study (1976) 69% of answers to the question "What is reading?" were categorized as essentially meaningless, leading Johns to suggest that many pupils have little understanding of the reading process. Older children gave somewhat better responses to the questions than did younger children, which may indicate problems of verbalisations in young children.

In his 1980 study, Johns observed that above-average readers scored significantly higher than below-average readers on half the items of the Sand Test, specifically on print-direction concepts, letter-word concepts, and advanced print concepts. However, in both his research studies cited above, Johns appears to underestimate the problems of verbalisation which the young child might experience, in that the child may know the correct answer, may have grasped the concept, but may not be able to verbalise it. Forms of non-verbal responding, as used in the LARR test and in the present study may have produced different results, particularly in his 1976 study.

However, Johns' studies above appear to support previous findings which have linked "cognitive clarity" to reading achievement, and to stimulate further speculation as to whether the child's understanding of print-related concepts is a cause or a consequence of reading achievement.

Tovey (1976) conducted a study of children's perceptions of reading, quantifying the children's perceptions of the purpose for reading by asking "What do you think you do when you read?" Of the responses obtained only 28% indicated that reading was related to meaning; 43% of the responses associated reading with looking at, pronouncing, learning reading or thinking about words; the remaining 29% described reading as spelling, talking, memorizing, breathing questions etc. Consequently Tovey considers whether the idea of reading for meaning is too difficult for young children as suggested by Piaget's egocentric stage of development, or whether children have been conditioned through the use of the "word recognition equals reading" model to think of reading as the naming of random words. Obvious eductional implications are implicit in the question of why these

confusions exist.

In view of the research outlined it would seem appropriate to further investigate the cognitive confusion/clarity of the beginner reader in reference to the nature and purpose of the activity of reading and conceptualisations about print, in relation to reading ability and to other factors previously considered important in early reading acquisition, such as visual and auditory discrimination ability.

Communicative similarities in language processes

Whilst print, as a medium of communication, requires an approach which takes into account its particular character and feel, as suggested by research outlined above, for example Clay (1972, 1975), the communicative similarities which exist between reading and writing and between reading and spoken language need to be understood by the young child, as suggested by Downing (1977) in reference to the importance of children "understanding their own language processes", leading to communicative competence necessary for success in reading.

Communicative similarities between spoken language and reading

Arnold (1982) takes the linguistic awareness debate one step further in a new emphasis on reading readiness which focusses more on the child's ability to interact with and make sense of experiences through oral language from a very early stage. Using transcripts of tape recordings, Arnold has demonstrated that children are more skilled in using spoken

language than was suspected, presenting evidence of linguistic versatility, projections into the future, use of classification, usage of different tenses, language not context bound, use of syntactic sequence, and understanding of story convention.

Arnold suggests that tentative conclusions may be drawn about ways in which spoken language shares some features which are met in reading, and that through listening to the child talking the seeds of literacy may be detected. Arnold further suggests that the close links between reading and normal speech are demonstrated in the early teaching of reading.

Communicative similarities between reading and writing

Following from the ideas of Chomsky (1968) and Goodacre (1971) and the more recent emphasis on "communicative competence" and requirement of meaning in reading, Warham's study (1982) concerns the transfer of taught writing skills to reading skills. Whilst recognizing, in the linguistic tradition, that a mismatch exists between spoken sound and written symbol, and that communicative differences also exist, in that the systems used in speech and text are quite different, Warham supports Clay's view (1975) that the teaching of earlier writing skills is beneficial for beginner readers because it focusses attention on the nature of the written text and thus increases the child's linguistic awareness. Moreover, Warham uncovers similarities between writing and reading in terms of what writers and readers both need to learn about written communication which they do not already know from their experience of spoken communication, for example the need to understand that text is organised into sentences which have

defining features.

The development of these symbolic and print-specific skills would therefore seem crucial to success in early reading.

The Language Experience approach to the teaching of reading

The Language Experience approach to the teaching of reading was developed in response to the requirement for reading to be a meaningful system of communication for the child, in that the words, sentences and concepts included have meaning and linguistic relevance for the child, and have been heard or spoken by the child prior to their printed presentation.

The child's own language style and experiences are thereby formalised in the learning situation, hence fulfilling in part the ideas advocated by Tough (1973) and Cazden (1977); and directing the child towards communicative competence necessary for success in reading.

Hall (1985) reviews current developments in the Language Experience Approach, which have particular relevance to the present study. These focus on the emergent literacy stage, the interrelationship of reading and writing, and the "explosion of attention to writing". Hall writes: "Recently educators have noted a change in the view of prereading and beginning reading from skill-oriented instruction to an increased awareness and appreciation of the emergent literacy learning exhibited by young children".

Holdaway (1979) observes that the emergent literacy is evident in the book behaviour of young children as they actively respond when read to. Similarly, Harste, Burke and Woodward (1983) in an examination of early writing and awareness of environmental print, suggest that children learn much about written language before formal reading and writing instruction begins, thus further complicating the issue of Reading Readiness and its implications for the teaching of beginning reading. The language-experience approach is considered by its advocates to develop the understanding that print makes sense, and to eliminate the "sharp division between prereading and beginning reading so evident in many commercial materials", a division which is further considered in Section B3a.

As such, this approach to early reading would seem highly relevant to the considerations underlying the present study.

The importance of listening to story in the development of symbolic skills necessary for success in reading

Wells (1982) suggested, on the basis of research evidence that of the various activities related to reading in his study, only listening to stories was significantly associated with later language measures the correlation value as yet unavailable. Listening to stories read aloud therefore appears to develop the linguistic awareness of the child, in that the child begins to gain experience of the sustained meaning-building organization of written language and of its characteristic rhythms and structures as well as learning to pay attention to the linguistic message as the major source of meaning. Most importantly, Wells suggests, the

child is beginning to come to grips with the symbolic potential of language - "its power to represent experience in symbols which are independent of the objects, events and relationships which are symbolized, and which can be interpreted in contexts other than those in which the experience originally occurred".

Similarly Raban (1982) on the basis of results of a small-scale study, suggests that books with a strong story line do enable young readers to develop appropriate strategies towards becoming readers, whilst Roney (1984) suggests that beginning readers often have a limited sense of story, and need to develop this to become proficient readers; that is "they must begin to associate written language with oral language and then develop an ear for those terms and structures found primarily in print". Mandel Morrow (1985) has concluded, on the basis of experimental research, that encouraging young children to retell stories after hearing them read improves the children's recall of the stories and their understanding of the stories' major structural elements. However, this was found to be not as successful with low achievers, whilst according to Morrow, high and middle achievers were found to improve significantly, with $p < .05$.

Similar to Smith's (1978) proposal that children get their first chance to solve many of the problems of reading when they and adults are reading the same text at the same time, Dixon (1984) advocates the "shared reading" approach as pioneered by Holdway (1979) in New Zealand, where children are exposed to written language by having stories read to them. Dixon suggests that shared reading "demystifies" reading and represents "a cooperative, non-competitive and minimally corrective progression towards literacy in

the home" (an approach further discussed in Section B3) which should continue in the classroom, where the child's successive approximations towards an exact rendering of the text be accepted. Dixon (1984) regards this as a vital part of the reading developmental process. However, Tobin (1981) suggests, on the basis of experimental evidence, that when differences among children, such as socio-economic status, nursery school (kindergarten) attendance, and intelligence are statistically controlled, being read to is not a predictor in success in reading. This would appear to go against the trends of other similar research, at least suggesting that other factors may be involved and that the relationship between reading story to the young child and subsequent success in reading is not a simple one. However, the weight of research evidence strongly supports the practice of story reading to pre-readers and beginner readers.

The role of the reading teacher in facilitating the development of the child's conceptualisations about print and print-specific skills

Hoffman and Fillmer (1979) proposed that young children be provided the opportunity to inquire and discover specific concrete concepts, and that the teacher should ensure that the concepts are understood by the child prior to the formal introduction of reading strategies. This would appear to concur with the views expressed by some earlier researchers in the field, for example Dewey (1898) and Holmes (1927) and the statement by Huey (1908) that the beginner reader should be "acquiring (his/her) own experiences and developing wants that will in time make reading a natural and meaningful process".

Hare (1984) suggests that children approach a state of cognitive clarity about reading in part by mastering the concept of "word", in relation to word consciousness problems, word boundary problems and word referent problems. Similarly, Goodall (1984) in an Australian study produced results which indicate that preschoolers know that print conveys information, yet they frequently use environmental cues rather than letter knowledge when they appear to read. Goodall suggests that reading of words in the environment might be the lowest level of a hierarchy of word knowledge skills, and concludes that "the strategies young children use in relying on the environment suggest they have not extracted from their encounters with print those skills which help them in their school reading classes". This statement would appear to have strong implications for the teaching of beginning reading related to concepts about print.

Evans and Carr (1985) address the question of effective teaching of print-specific skills: "Reading, then, is a complex skill that requires a certain amount of direct instruction and supervised practice in order to establish minimum levels of competence in beginners". Evans and Carr suggest that the development of print-specific skills provides a beginner reader with the resources "to use knowledge and inference flexibly rather than slavishly, making early concentration on print-specific skills a gateway - not an impediment - to effective reading". This would appear to aptly imply the responsible role of the reading teacher.

SUMMARY

A review of research has appeared to indicate the possibility of a significant relationship between progress in reading and the child's linguistic awareness and cognitive development, and specifically conceptualisations about print and about the nature and purpose of reading. Research findings would appear to suggest possible implications both for a reassessment of the most important factors involved in Reading Readiness and early reading progress, and for educational practice.

The work of Piaget would appear relevant to our understanding of the Readiness of the child for reading, in that the egocentric stage characteristic of most beginner readers may not be conducive to a natural understanding of the purpose of written language.

The concepts of "cognitive confusion" and "cognitive clarity" have provided useful descriptions of the young child's understanding of the functions of reading and writing and of the technical language necessary for success in learning to read. Much research has been directed at identifying factors and processes in early reading which will promote cognitive clarity, and at establishing pre-reading and reading-recovery programmes to facilitate this clarity. It would therefore seem appropriate to investigate the predictive value of the beginner reader's conceptualisations about print and reading in relation to other factors considered important in early reading acquisition, such as visual and auditory discrimination ability.

The recent shift in emphasis in the concept of Reading Readiness towards focussing on the child's recognition of literacy behaviour and understanding of literacy functions and of the technical language of literacy has been reflected in the development of the Linguistic Awareness In Reading Readiness Test: LARR, Downing Ayers and Schaefer (1983). Whilst the predictive validity of the test is being further investigated with a view to improvement, the LARR test would appear to contribute significantly to our understanding of Reading Readiness and early reading progress at the present time, particularly in its focus on the child's understanding of the technical language of literacy.

Clay's analysis of reading as a patterning of complex behaviour, by which the child extracts a sequence of cues from printed texts to understand the message of the text, has contributed greatly to our understanding of early reading development. In particular, Clay's emphasis on concepts about print and the urgent need for early identification and correction of inappropriate responses to print in terms of directionality, orientation, and letter and word concepts for example, has significantly influenced our attempts to develop the communicative competence and "cognitive clarity" of the child in the early stages of learning to read. Despite some criticisms of Clay's Concept About Print Test (Sand), for example those made by Hartley and Quire regarding the simultaneous inclusion of concepts likely to be acquired at pre-reading and reading stages, the test itself would appear to provide a useful diagnostic measure to uncover unlearned concepts and learned confusions. It would seem appropriate, therefore, to utilise this test in an assessment of the relationship betwen concepts about print and reading ability in comparison with other factors considered important

in reading acquisition.

Recent studies of the child's concepts of the nature and purpose of the activity of reading have supported the findings of earlier studies that "cognitive confusion" appears to be the condition of many young readers. Such findings have lead to a consideration of the problems of verbalisation in young children, of whether the concept of reading for meaning is in fact too difficult for young children, and whether children are conditioned through teaching practices to regard reading as "word recognition". Such considerations would appear most relevant to a study of factors associated with early reading development.

Communicative similarities between reading and writing have been proposed, for example by Warham (1982), and the value of teaching early writing skills in focussing the child's attention on the nature of written text has been emphasised by several writers: the development of symbolic and print-specific skills through early writing is presented in the research literature as necessary for success in early reading.

The recent emphasis in research on developing the communicative competence of the young child has particular relevance to the teaching methods and approaches used with beginner readers. The Language-Experience approach to the teaching of reading was developed in response to the need for reading to be a meaningful system of communication for the child. Recent developments in this approach have focussed on the emergent literacy stage, and particularly on the development of the child's understanding that print makes sense, that it is communicative. The Language-Experience approach to

reading would therefore seem to be a positive response to the work of many authorities in this field who stress the importance of meaningful reading and "cognitive clarity" regarding its nature and purpose. This approach is therefore of relevance to the considerations underlying the present study.

The importance of listening to story in the development of necessary symbolic skills appears to be well supported by research findings. In particular, the value of shared reading as "demystifying", or reducing cognitive confusion, has been suggested, for example Dixon (1984).

The role of the teacher in facilitating the development of the child's conceptualisations about reading and print and of print-specific skills is therefore strongly indicated. Direct instruction and supervised practice would seem necessary for the development of minimum levels of competence in beginner readers. This would appear to provide a point of convergence for the holistic and elements approaches to the teaching of reading, where print-specific skills related to the purpose of meaningful reading may be taught within a rich language-experience environment. It would therefore seem appropriate to further assess the relative predictive value of a child's concepts about print in the early stages of learning to read.

1. Specific Problem Area

As indicated in previous sections, knowledge and understanding of the process of reading, and research and educational practice related to reading would appear to be limited by the apparent lack of clarity, concensus and consistency in definitions of "reading" and "Reading Readiness" (See sections A1 and A2).

Review of the literature and of the numerous reading tests and procedures available would tend to confirm that reading is a complex activity, and in view of this it would seem necessary to identify the factors most closely related to reading ability and reading progress, and to establish the relative predictive values of these factors.

The work of Marie Clay, for example, has indicated the importance of the child's concepts about print on reading progress, whilst Thackray (1964, 1971, 1974) found Visual and Auditory Discrimination abilities to be most highly correlated with reading ability, as represented by the child's performance on reading comprehension and word recognition tests, whilst a study by Dearing (1980) suggested that a child's concepts about print correlated more highly with reading ability than did either visual or auditory discrimination ability.

In addition, sociological factors related to social class, and sex differences, have been cited as important factors in reading ability and reading progress, as has general intellectual ability. As well as identifying the correlations between reading ability and single variables, the complexity of the reading process might be more logically understood by identifying correlations between reading ability and combinations of other variables, with the aim of identifying a variable and specific group of variables which together may most successfully predict success in early reading, using a multiple regression analysis.

Where such correlations are established, and where these correlations may have later been shown to be causal, recommendations for educational practice regarding reading may be implied.

The specific problem area being outlined above, the present study was therefore concerned with examining the possible predictive value of the following variables in relation to the child's success in reading in the early stages:

1. The child's understanding of the technical language of reading, or concepts about print; and the child's understanding of the nature and purpose of reading, or concepts about reading.
2. Visual Discrimination Ability.
3. Auditory Discrimination Ability.
4. General Intellectual Ability.

2. Hypotheses

The hypotheses underlying the present study are as follows:

Hypothesis 1

That a significant relationship exists between Reading Ability* and Conceptualisations about Print in children between the ages of 5 and 8 years.

Hypothesis 2

That a child's understanding of concepts about print gives a significantly more valid prediction of progress in beginning reading than do either the child's powers of auditory and visual discrimination, or his/her general intellectual ability.

3. Further Objectives Of The Present Study

In an extension of the study an attempt will be made to compare findings with those of Thackray (1964, 1972) on factors related to Reading Readiness. The study will attempt to examine the possible predictive values of those variables under consideration within age, sex and school sub-groups, where school represents social class, through analysis of Catchment Area.

Whilst much research, as previously outlined, has been concerned with the variables investigated in the present study, most studies appear to have concentrated on the influence of a single variable or classification variable in early reading progress.

Evaluation of the relative contributions of different predictor variables by comparison of alternative "models", whereby certain grouped variables may produce a best 'predictor set', would seem therefore to contribute to the field.

A questionnaire procedure will be reported and discussed in relation to assessment of the child's pre-reading home based experiences.

It is the writer's intention that the present study may contribute, therefore, to the current reassessment of the Reading Readiness concept.

*Reading Ability is represented by a measure of word recognition in the present study.

4. Design Of The Study

Schools and Social Class

In view of significant correlations reported to exist between catchment area and attainment in reading, for example Wells & Raban (1977), two schools were identified and selected for the study on the basis that the pupils differed as far as possible in social class as indicated by the school catchment area, an approach to social class differentiation used by Lunzer, Dolan and Wilkinson (1976). A further criterion for selection of schools was that they be matched on approach to the teaching of reading in the early years.

To identify the two schools to represent Social Class Upper, School A, and Social Class Lower, School B, the services of the LEA advisory body were enlisted, and an LEA social priority rating obtained for the schools.

This rating is designated according to the following criteria:

1. Social and economic status of the parents of children at school;
2. Absence of amenities in the homes of children attending school;
3. The proportion of children receiving free school meals, and belonging to families in receipt of supplementary benefits under the Ministry of Social Security Act 1966;
4. The proportion of children in school with serious language difficulties;
5. The proportion of retarded, disturbed and handicapped children.

(The above criteria would appear to be in line with the socio-economic indicators taken from the National Dwelling and Housing Survey NDHS and 1971 Census of Population cited in the Department of Education and Science Statistical Bulletin, July, 1982 "A Classification of Local Education Authorities by Additional Educational Needs". See Appendix I.)

More detailed information about the catchment areas of the respective schools was obtained from the headteachers by questions regarding the following:

1. The nature of house ownership or otherwise: privately owned homes; rented homes; council estate owned or council estate rented.
2. The type of occupations of the majority of fathers of the children attending the schools: professional/managerial; skilled; semi-skilled; manual; unemployed.

The information obtained on the above is presented as Social Class Profiles in Appendix 2.

Matching Schools and Approach To The Teaching Of Reading

Having selected the two schools according to Social Class considerations, procedures were established to ascertain whether, as suggested by the LEA advisory body, the schools were sufficiently matched for the purposes of the study in their approach to the teaching of reading in the early years. These were as follows:

1. Interview with Head Teacher, covering aspects of class organisation, reading and writing policies, and provision for the teaching of reading in school.
2. Interviews with the Reception Class Teacher, including a check-list concerned with activities, approach and materials used in the early stages of teaching reading.

The general approaches to the teaching of beginning reading in both schools were described as language-experience with inbuilt phonics teaching.

The checklists used for matching schools are presented in Appendix 3.

The factor of pre-school experience was not controlled within the present study, but the assumption was made that this was loosely parallel for the children attending the respective schools in that the majority of children in the study from School B, had attended the school nursery, whilst the majority of children in the study from School A had attended a well-organised and progressive playgroup.

The quality of pre-school experience in the home, being highly correlated with success in early reading, (Clark, 1976; Wells & Raban, 1979; Morrow, 1983) was investigated by the administration of a questionnaire to the parents of the 5 year old children from both schools in the study. The questionnaire was administered after all the testing and data collection and therefore the findings, presented in Appendix 4, did not influence the selection of schools or subjects.

School A (Social Class Upper) and School B (Social Class Lower), having fulfilled the requirements outlined above, were duly selected for the present study.

The catchment area of School A comprises a modern Wimpey/Staveley estate in a semi-rural, semi-industrial location.

The catchment area of School B falls within a declining mining and industrial village located on the outskirts of the City.

Subjects

The subjects were drawn from the reception, middle infant, top infant and first year junior classes of both schools, providing three age groups, 5, 6, and 7/8 years, where N = 130, and chronological age at commencement of the study ranged from 4.10 to 8.2 whilst chronological age at time of testing ranged from 5.1 to 8.5, and actual sample size = 129, one child transferring school during the testing period.

The composition of groups of subjects is presented in Table 2.

Table 2

SCHOOL A						SCHOOL B					
Age 5		Age 6		Age 7/8		Age 5		Age 6		Age 7/8	
G	B	G	B	G	B	G	B	G	B	G	B
8	13	10	12	11	17	6	9	6	8	15	14
21		22		28		15		14		29	
School Total : 71						School Total : 58					
N = 129											

The age ranges of subjects within the age groups at time of testing are presented in Table 3.

Table 3

Age Groups	School A	School B
5	5.3 to 5.11	5.1 to 5.11
6	6.3 to 6.11	6.1 to 6.11
7/8	7.0 to 8.1	7.0 to 8.5

In view of the small numbers of subjects within the sub-groups, and in order to obtain as large a sample as possible, sub-groups were not matched numerically.

No significant difference was found between scores on the criterion variable for the oldest children within the 7/8 age group whose chronological age at time of testing was 8.+ and the remaining children within the 7/8 age group, for both schools, and therefore the age groups were maintained as outlined.

As length of time in school has been associated with reading progress, (a significant proportion of children identified as having particular learning difficulties and problems with reading throughout the early school years, having had one or two terms less than their peers due to their birthday falling between the months of May and September and thus, starting school in the 3rd term as "Easter starters"), this factor was analysed for the sample. See Table 4 below.

Table 4 : An analysis of Easter Starters : children with birthdays between May and September

	School A			School B		
	5 ($/_{21}$)	6 ($/_{22}$)	7/8 ($/_{28}$)	5 ($/_{15}$)	6 ($/_{14}$)	7/8 ($/_{29}$)
Number	11	11	8	5	7	8
%	52%	50%	28%	33%	50%	27.5%
Total	30			20		
%	42%			34%		

Whilst a larger proportion of Easter Starters were found in School A Age 5 group than in School B Age 5 group, the sub-groups were considered to be generally comparable for the purposes of the present study, differences being small. The issue of length of time in school and the wider implications will be discussed further in Section E.

Assessment Procedures

The following tests were administered to all subjects:

1. The Carver Word Recognition Test.
2. Sand : Marie Clay's Concepts About Print Test.
3. Concepts/Behavioural Test.
4. "Reading Is" Photograph Test.
5. Wepman Auditory Discrimination Test.
6. Daniels and Diack Visual Discrimination Test.
7. Goodenough-Harris Drawing Test.

Whilst the writer recognises the limitations of this approach, to be further discussed in Section E2, the word recognition score was used as an indicator of Reading Ability in the present study.

The Concepts/Behavioural Test was devised by the writer to provide non-verbal methods of obtaining measures on some of the items in the Clay test (Sand), but using behavioural responses such as drawing a line, circling, crossing out. This was an attempt to meet some of the criticisms of the Clay test, for example by Hartley and Quire (1982), and to eliminate possible problems of verbalisation.

The "Reading Is" Photograph Test was devised by the writer to establish both non-verbal and verbal measures of the child's concepts of reading, its nature and purpose. A selection of 9 photographs depicting a child involved in a variety of activities such as painting, writing, watching

television, and including reading a story book, looking at a picture book, and holding a story book upside down, were presented to the child in an informal interview situation. (Copies of the photographs used are presented in Appendix 5).

The child was asked to select the photograph depicting 'reading', and then to respond to the questions "When Sarah is reading, what is she doing? - When you read, what do you do?", thereby engaging the child in conversation about reading, its nature and purpose and obtaining verbalisations which could subsequently be analysed and categorised according to reading for meaning, reading as decoding, and other responses.

The Goodenough-Harris Drawing Test was used to provide a measure of the child's general intellectual ability.

In addition to the above tests, the Thackray Reading Readiness Profiles were completed by the 5 year old children in the study, and one year after the initial testing the Schonell Graded Word Reading Test was administered to a sub-group of the 5 year old children in order that a direct comparison might be made with Thackray's studies (1964, 1972, 1974) the results of which will be analysed and discussed in Results Section 2.

For both the 6 and 7/8 age groups, the Carver Word Recognition Test was administered first, and in small groups. The Draw-A-Man Drawing Test completed this testing session. Both the instructions for and the scoring of the drawings were carried out according to the Goodenough-Harris Drawing Test Manual.

The remaining 5 tests were administered imdividually over two subsequent testing sessions of 3 and 2 tests respectively, in an attempt to reduce practice effects and test fatigue, and the order of tesis was randomised to minimize the effect of this variable.

Attempts were made to establish rapport with the children prior to testing, and this was reinforced between tests and at the conclusion of testing sessions.

The pre-test activities and tests themselves were presented, as far as possible, whilst adhering to test administration instructions, as reading games, and there were no non-respondents, except in the "Reading Is" Photograph Test, where a small number of children were unable to verbalise a response (N = 7).

Before conducting the Concepts/Behavioural Test, a pre-test exercise was carried out, involving all the responses which would be required in the test, to ensure that the child would be able to perform these without difficulty. The children appeared highly motivated by this and it provided a useful play activity within the testing session.

For the 5 year old children in the study, the Thackray Reading Readiness Profiles were administered first, and in small groups. The Profiles were considered to provide the most appropriate introduction to testing procedures for the young children.

The remaining tests were administered individually, as for the 6 and 7 year old children, with the additional group testing session for the Carver Word Recognition Test.

Chronological age was used for the subject order within groups.

The testing took place in the same location, a quiet reading area adjacent to the children's classrooms, and as the 2 schools in the study were similar in design and organisation it was considered that, as far as possible, the testing conditions were the same for all testing sessions for the children of the different age groups and schools.

Apart from the procedures devised by the writer for the purpose of the present study, (the "Concepts/Behavioural Test and the "'Reading Is' Photograph Test"), the test items were administered and scored according to the instructions given in the respective Test Manuals.

Where class members were not included in the study because they did not fall within the required age ranges, time was spent with these children in talking and reading activities. In addition is was usual practice in both schools for children to read to and work with other teachers and non-teaching assistants in the adjacent reading areas, and therefore the Hawthorne effect was considered to be reasonably controlled in the present study.

Assessment Schedule

Testing was carried out over the period from November 1982 to April 1983, with a follow-up test of a sub-group (School A 5 year olds) administered in April 1984 to provide information on actual progress in reading. Questionnaires were completed by parents of the 5 year old children in the study in May 1983.

The testing schedule adopted permitted testing of a particular age group from both schools within a two-week period.
The testing periods themselves were at two-monthly intervals, an arrangement which was organisationally acceptable to the schools, and the order of schools for testing was alternated for each testing period to control any possible effect of this variable on results.

Pre-test visits and pilot studies were undertaken during the Summer Term of 1982.

The time schedule for testing is summarized in Table 5 below:

Table 5

Testing Period	Date	School	Age Group
1	Nov. 1982	A	6
	Nov. 1982	B	6
2	Feb. 1983	B	7/8
	Feb. 1983	A	7/8
3	April 1983	A	5
	April 1983	B	5
4	April 1984	A	5

1. Data Presentation And Analysis

SECTION 1a

Predictor, Classification and Criterion Variables

The calculations to be reported in this section were obtained using STATPK under vm/cons, an interactive statistical package containing 23 statistical analyses and data modification routines, originally developed at McGill University, Canada, and by multiple regression using GLIM, which provides investigation of the possible relationships between independent or predictor variables and the dependent or criterion variable. GLIM also allows evaluation of the relative contributions of the predictor variables by comparing the possible models, thereby indicting the relative value of eliminating variable(s) from the model.

The method of estimation is that of least squares and the method of deciding the significance of the terms is the Analysis of Variance. GLIM performs the least squares estimation of the coefficients and outputs the Deviance and its corresponding degrees of freedom (DF), where the Deviance is the sum of squares of the errors in the fitted relationship.

Table 6 below shows the means, standard deviations, standard errors, maximum and minimum values, coefficient of variation values and Sheard Index for each of the predictor variables and for the criterion variable for the group as a whole.

Table 6

Predictor Variable	Mean	Std. Dev.	Std. Error	Max.	Min.	Range	Coeff. of Var.(*)	Sheard Index(**)
Concepts (Sand)	16.43	4.56	0.40	23.00	5.00	18.00	.28	.71
Concepts (Behav.)	12.39	3.43	0.30	17.00	3.00	14.00	.28	.72
Vis. Disc.	15.91	2.83	0.25	19.00	1.00	18.00	.18	.83
Aud. Disc.	25.32	2.93	0.26	30.00	10.00	20.00	.11	.84
Intell. Abil.	91.18	16.98	1.46	132.00	6.00	126.00	.19	.69
Criterion Variable Carver	35.75	13.51	1.19	50.00	2.00	48.00	.38	.71
N = 129								

$$(*)\ \text{Coefficient of Variation} = \frac{\text{Standard Deviation}}{\text{Mean Value}}$$

$$(**)\ \text{Sheard Index} = \frac{\text{Mean Value}}{\text{Maximum Value}}$$

Table 6 shows that substantial ranges of scores were obtained for all the predictor variables and for the criterion variable.

The standard deviations for the measures of Visual and Auditory Discrimination abilities being low may suggest either little variation in these abilities throughout the sample population as a whole, or that the measures used did not allow fine discriminations between individual performances, their fitness for use thereby being questionable in the present study.

The Coefficients of Variation and the Sheard index for the measures of the discrimination abilities would tend to support the latter view, particularly for the measure of Auditory Discrimination.

The significance of this finding is discussed in Section E.1.

Table 7 : The means and standard deviations for the predictor and criterion variables both for the sample as a whole and for each of the sub-groups of school, age and sex.

	ALL		SCHOOL A		SCHOOL B		AGE 5		AGE 6		AGE 7/8		BOYS		GIRLS	
Predictor:	m	sd	m	sd	m	sd	m	sd	m	sd	m	sd	m	sd	m	sd
Concepts (Sand)	16.43	4.56	17.81	3.48	14.90	5.13	13.14	4.83	15.87	3.99	18.97	2.93	16.49	4.54	16.30	4.68
Concepts (Behav.)	12.39	3.43	13.47	2.06	11.20	4.23	10.16	3.98	11.62	2.73	14.33	2.04	12.74	3.07	11.81	3.86
Visual (Disc.)	15.91	2.83	16.38	2.13	15.32	3.39	14.27	3.67	15.19	3.36	17.13	1.57	16.01	2.48	15.75	3.20
Auditory (Disc.)	25.31	2.93	26.19	2.04	24.33	3.48	23.95	3.75	25.05	3.46	25.95	2.45	25.30	2.65	25.42	3.26
Intell. Abil.	91.18	16.98	92.06	16.12	90.47	17.91	88.32	18.10	87.78	19.57	96.00	12.85	88.72	15.18	93.98	18.67
Criterion v. (Carver)	35.75	13.51	37.86	10.75	33.75	15.92	26.16	14.23	32.16	11.56	44.48	7.49	35.66	12.92	35.63	14.18

Table 7a : Significances of between-group differences of the sub-groups of school, age and sex on the predictor and criterion variables, from Table 7.

	School A v School B	Age 5 v Age 6	Age 5 v Age 7/8	Age 6 v Age 7/8	Boy v Girl
Concepts (S)	* *	* *	* *	* *	
Concepts (B)	* *		* *	* *	
Vis. Disc.	*		* *	* *	
Aud. Disc.	* *		* *		
Intell. Abil.			*	* *	
Criterion v. (Carver)			* *	* *	

* * p=0 .01 * p=0 .05

Tables 7 and 7a

The performance of School A subjects was found to be superior to that of School B subjects on all predictor measures and on the criterion measure, these differences being statistically significant at the .01 level of significance on the predictor measures of Concepts (Sand), Concepts (Behavioural) and Auditory Discrimination, and at the .05 level of significance on the predictor measure Visual Discrimination.

Whilst the performances of subjects in sub-group Age 6 were found to be superior to those of subjects in sub-group Age 5 on all but the measure of Intellectual Ability, these between group differences were found to be statistically significant only for the predictor measure Concepts (Sand), at the .01 level.

However, between group differences for the sub-groups Age 5 and Age 7/8 were found to be statistically significant on all measures at the .01 level, except for the measure of Intellectual Ability, where the between group difference was found to be statistically significant at the .05 level.

The between group differences for the sub-groups Age 6 and Age 7/8 were also found to be statistically significant on all measures at the .01 level, except for the measure of Auditory Discrimination, where no statistical difference was found.

An improvement with age is therefore shown to exist, being greater between Ages 6 and 7/8 than between Ages 5 and 6, and most marked between Ages 5 and 7/8.

Table 8 : The intercorrelations between predictor variables and the criterion variable for the sample as a whole.

Table 8

	Concepts S	Concepts B	Vis. Dis.	Aud. Disc.	Intell. Abil.
Concepts S	1.00	0.83	0.63	0.44	0.36
Concepts B	0.83	1.00	0.66	0.41	0.41
Vis. Disc.	0.63	0.66	1.00	0.46	0.22
Aud. Disc.	0.44	0.41	0.46	1.00	0.08
Intell. Abil.	0.36	0.41	0.22	0.08	1.00
Criterion Variable Carver	0.85	0.80	0.66	0.41	0.39
N = 129					

Intercorrelations between the predictor variables and criterion variable for the sample as a whole are presented in Table 8.

The predictor variable Concepts (Sand) is shown to correlate most highly with the criterion variable (.85), followed by Concepts (Behavioural) (.80), Visual Discrimination (.66), Auditory Discrimination (.41), and Intellectual Ability (.39).

Regarding the predictor variables, the variable Concepts (Sand) is shown to correlate most highly with Concepts (Behavioural) (.83) and Visual Discrimination (.63), and to obtain low correlations with both Auditory Discrimination (.44), and Intellectual Ability (.36).

Concepts (Behavioural) was found to correlate with Visual Discrimination (.66), but low correlations were obtained between Concepts (Behavioural) and both Auditory Discrimination (.41) and Intellectual Ability (.41).

Inferior correlations were obtained for Auditory Discrimination than for Visual Discriminations on all variables.

The lowest correlations obtained overall related to Intellectual Ability. The highest correlations for this variable were found to be .41 with Concepts (Behavioural) and .39 with the criterion variable.

Table 9 : The correlations between the predictor variables and the criterion variable, both for the sample as a whole and for the sub-groups

Predictor Variables:	Criterion Variable : Carver Score							
	All	School A	School B	Age 5	Age 6	Age 7/8	Boys	Girls
Concepts (Sand)	0.85	0.81	0.88	0.88	0.73	0.64	0.85	0.83
Concepts (Behav.)	0.80	0.69	0.86	0.81	0.71	0.42	0.80	0.80
Visual Discrim.	0.66	0.42	0.75	0.62	0.50	0.31	0.70	0.63
Auditory Discrim.	0.41	0.22	0.46	0.26	0.44	0.26	0.36	0.45
Intell. Ability	0.39	0.25	0.50	0.44	0.08	0.20	0.34	0.46
N = 129								

Table 9 presents the correlations between the predictor variables and the criterion variable, both for the sample as a whole and for the sub-groups.

The data may be summarized as follows:

1. The predictor variable Concepts (Sand) yields higher correlations with the criterion variable than does any other single predictor variable.

2. Concepts (Behavioural) yields the second highest correlation values. However, the Fisher Z test reveals no significant difference between the correlation coefficients for Concepts (Sand) and Concepts

(Behavioural) variables with the criterion variable, except for sub-group School A, where the 95% credible interval concerning r for Concepts (Sand) was .71 ≤ r ≤ .88.

3. Visual Discrimination Ability yielded the third highest correlation values. The Fisher Z test revealed significant differences between the correlation coefficients obtained between this variable and the criterion variable and those obtained by both concepts variables and the criterion variable, except for sub-group Boys, where the 95% credible interval concerning r for Visual Discrimination was .56 ≤ r ≤ .80; and for Age Group 7/8, where the 95% credible interval concerning r for Visual Discrimination was .06 ≤ r ≤ .52.

   However, in both these cases, significant differences in correlation coefficients were obtained between Visual Discrimination and Concepts (Sand).

4. Auditory Discrimination yielded consistently low correlation coefficients, as did Intellectual Ability; and credible intervals for these variables reveal no significant differences between their values.

5. Correlations between predictor and criterion variables are higher in School B than in School A, however, using the Fisher Z test for 95% credible interval concerning r, the differences in correlation coefficients between schools are found to be significant on the variable Visual Discrimination, for School A the confidence interval being .21 ≤ r ≤ .59, and for School B .61 ≤ r ≤ .84. Whilst the

credible intervals are shown to overlap for Schools A and B between the criterion variable and predictor variables Concepts (Behavioural) (.55 ≤ r ≤ .80 for School A, .77 ≤ r ≤ .89 for School B); Auditory Discrimination Ability (0 ≤ r ≤ .44 for School A, .24 ≤ r ≤ .64 for School B); and Intellectual Ability (.03 ≤ r ≤ .46 for School A, .28 ≤ r ≤ .67 for School B), the between Schools differences on these correlation coefficients may be considered significant when related to the intervals themselves from both values of r.

6. Correlations between predictor and criterion variables are higher in Age 5 than Age 6, and least in Age 7/8. Using the Fisher test, the 95% credible interval concerning r for Age 5 Concepts (Sand), .78 ≤ r ≤ .94, shows the correlation coefficient of .88 to differ significantly from those obtained from Ages 6 and 7/8 subjects.

7. Correlations between predictor and criterion variables are higher in Boys than Girls, except in Auditory Discrimination and Intellectual Ability. However, the Fisher Z test reveals no significant differences between the correlation coefficients for Boys and Girls.

8. Correlations between the predictor variable Concepts (Sand) and the criterion variable are consistently high over all sub-groups, and lowest for sub-groups Age 6 and 7/8 (.73 and .64 respectively). The Fisher Z test reveals no significant difference between the correlation coefficients obtained for Concepts (Sand) between sexes and between schools. Similarly, no significant difference between the correlation coefficients for Concepts (Sand) with the criterion variable was found

for sub-groups Age 6 ad 7/8, the credible interval concerning r for Age 6 Concepts (Sand) being $.54 \leqslant r \leqslant .85$.

9. Correlation coefficients between predictor and criterion variables are superficially highest for sub-group School $\bar{B}$ and lowest for sub-group Age 7/8. However, the use of credible intervals as above has indicated that several between group differences in correlation coefficients are not significant, as presented in Table 9a.

The use of credible intervals above has provided a guide, therefore, to the significances of differences between correlation coefficients, the most educationally relevant being the differences between Age groups 5 and 7/8 on both Concepts variables and on Visual Discrimination Ability, and the differences between Age groups 5 and 6 on Concepts (Sand).

Prediction of reading ability, therefore, appears to become increasingly difficult with the increased age of the child.

Table 9a : The significances (*) of between group differences in correlation coefficients between the criterion and the predictor variables, using the 95% credible interval (Fisher Z test).

	School A v School B	Age 5 v Age 6	Age 6 v Age 7/8	Age 5 v Age 7/8	Boys v Girls
Concepts (Sand)		*		*	
Concepts (Behavioural)	*			*	
Visual Discrimination	*			*	
Auditory Discrimination	*				
Intellectual Ability	*	*			

(*) The above significances are related to outside the credible intervals from both values of r.

Table 10 : The effect of stepwise regression of predictor variables on the criterion variable for the sample as a whole.

Step	Variable Selected	Sum of Squares reduced	F for this variable	Cumulative sum of squares reduced	Mult. Correl.
1	Concepts (Sand)	16836.934	328.103	16836.934	0.85
2	Visual Discrimination	417.353	10.052	18164.098	0.88
3	Intellectual Ability	236.054	5.909	18400.148	0.89
4	Concepts (Behavioural)	117.709	2.994	18517.855	0.89
5	Auditory Discrimination	15.877	0.402	18533.730	0.89

Table 10 presents the effect of stepwise regression of predictor variables on the criterion variable for the sample as a whole.

Concepts (Sand) is shown to be the most powerful predictor, yielding a multiple correlation value of .85, with Visual Discrimination making the next best contribution to the regression, increasing the multiple correlation value to .88.

Auditory discrimination proved to be the least powerful predictor in this regression, maintaining the multiple correlation value at .89, which is the value for the combined predictors.

The position of Concepts (Behavioural) at the 4th step may be as a result of the similarity of this and Concepts (Sand) and the nature of the correlation of Visual Discrimination Ability with both Concepts variables and with the criterion variable (see Table 8).

The position of Intellectual Ability, at the 3rd step in the regression, may be due to the similarity of discrimination tasks of the Auditory and Visual measures, although this variable has been shown previously (Tables 8 and 9) to have low correlations with other predictor and criterion variables.

The main finding from Table 10, therefore, is the superiority of the variable Concepts (Sand) in the regression.

Variable Selected	Step							F for this variable								Multip		
	All	Age			School		Sex		All	Age			School		Sex		All	Age	
		5	6	7/8	A	B	B	G		5	6	7/8	A	B	B	G		5	6
Concepts (Sand)	1	1	1	1	1	1	1	1	328.103	118.059	38.888	40.967	129.276	202.109	188.408	118.232	0.85	0.88	0.7
Age	2	2	3	2	3	4	2	4	20.444	7.296	2.426	12.449	4.903	2.531	23.430	1.539	0.87	0.90	0.7
Visual Discrim.	3	3	7	3	6	2	3	2	10.052	3.556	0.198	1.554	0.393	11.950	9.536	6.780	0.88	0.91	0.8
Intell. Ability	4	5	5	7	4	5	4	5	5.909	3.657	1.100	0.001	1.244	1.698	3.348	1.147	0.89	0.93	0.8
Concepts (Behav.)	5	7	2	4	2	3	5	3	2.994	0.455	6.403	0.657	8.911	5.592	0.218	3.687	0.89	0.93	0.7
Auditory Discrim.	6	6	4	5	7	6	6	6	0.402	1.063	1.374	0.662	0.080	1.577	0.162	0.350	0.89	0.93	0.8
Sex	7	4	6	6	5	7	7	7	0.436	3.020	0.252	0.005	0.401	0.010	0.008	0.102	0.89	0.92	0.9

Table 11 presents a summary of the stepwise regression analysis of predictor and classification variables on the criterion variable, for all sub-groups and for the sample as a whole.

The goodness of fit and stability of the Concepts (Sand) variable is clearly demonstrated overall.

The classification variable Age is also presented as contributing significantly to the regression model in the sample as a whole and for most sub-groups, the possible exceptions being School B and Girls, although the differences in multiple correlation values between the Age variable and the Step 2 and Step 3 variables for these sub-groups are shown to be negligible.

The predictor variable Auditory Discrimination, and the classification variable Sex are both shown to contribute little to the regression.

The multiple correlation values would appear to indicate that little advantage is to be gained after the 3rd step in the regression, and that in general the predictor variables Concepts (Sand) and Visual Discrimination plus the classification variable Age present the strongest predictive combination overall, the similarity of the variables Concepts (Sand) and Concepts (Behavioural) possibly accounting for selection of the latter at later stages within the regression.

The results presented in Table 11 strongly suggest, therefore, the superiority of the Concepts (Sand) variable over all other predictor variables, and that little contribution to the regression is made by the introduction of other variables, with the possible exception of Age and Visual Discrimination.

The Age effect would appear to have eductional implications, there being a systematic reduction in Mutlple Correlation value as age increases, suggesting that prediction of reading progress becomes increasingly difficult as the age of the child increases.

As Age is a known factor, it would appear that knowledge of the child's performance on Concepts (Sand) would provide the teacher with the relevant information needed to successfully predict reading progress.

Table 12 : presents the effect of removing each of the predictor variables from the complete model with respect to the criterion variable, where the classification variables of Age, Sex and School are included within the analysis, for the sample as a whole.

Predictors / Classification Variables									Deviance	DF	F Value	Significance
Model	Conc. (Sand)	Conc. (Behav.)	Vis. Disc.	Aud. Disc.	Intell. Ability	Age	Sex	School				
1	+	+	+	+	+	+	+	+	4671	120		
2	-	+	+	+	+	+	+	+	6454	121	45.81	*
3	+	-	+	+	+	+	+	+	4901	121	5.91	**
4	+	+	-	+	+	+	+	+	4832	121	4.14	**
5	+	+	+	-	+	+	+	+	4700	121	0.75	-
6	+	+	+	+	-	+	+	+	4802	121	3.37	-
7	+	+	+	+	+	-	+	+	4941	121	6.94	*
8	+	+	+	+	+	+	-	+	4681	121	0.26	-
9	+	+	+	+	+	+	+	-	4838	121	5.29	**

* p > .01
** p > .05

Table 12 presents the effect of removing each of the predictor variables from the complete model with respect to the criterion variable, including the classification variables, which in themselves may be of predictive value, for the sample as a whole.

The deviance values presented are the sums of squares of the errors in the fitted relationship, and therefore a significant increase in this value above that of the full model indicates that the variable under consideration should not be omitted from the model.

Table 12 shows Concepts (Sand) to be the most powerful variable in the regression, the deviance of this variable being statistically significant at the .01 level, whilst the deviance values of Concepts (Behavioural) and Visual Discrimination are shown to be statistically significant at the .05 level.

The classification variable Age is also shown to be statistically significant at the .01 level, whilst that of School yielded a significance level of .05.

The deviance values produced for Auditory Discrimination, Intellectual Ability and Sex were not found to be statistically significant. The plots of the fitted relationships of these predictor variables on the criterion variable are presented in Appendix 7.

These results would appear to support the findings of previous analyses within the present study of the consistent strength of Concepts (Sand) as a predictor variable, and the relevance of the Age factor, at the same time supporting the views that both Visual Discrimination Ability and the School factor (or the combination of catchment area, School and home influences as discussed in Section B3a) are significantly related to reading progress.

The overall finding of the above analysis, therefore, is the weight of evidence in support of the superiority of the Concepts (Sand) variable within the regression.

In order to identify the best combination of variables for predicting reading ability, the deviance values and corresponding degrees of freedom were obtained for the various combinations of predictor and classification variables, through least squares estimation of the coefficients within the relationship, for the sample as a whole. These values are presented in Appendix 8.

Presented in Table 13 are the deviance values and degrees of freedom for those variables and combinations of variables already identified as powerful predictors within the present study. Goodness of fit in the regression is indicated by low deviance values, the lowest value thereby indicating the best fitted relationship where degrees of freedom are similar. As the deviance value when all predictor and classification variables were included was 4671, DF = 120, the closest approximations to this value would indicate the best combination of variables.

The predictor variables Concepts (Sand), Concepts (Behavioural) and Visual Discrimination appear to form a powerful combination, whilst that of Concepts (Sand), Concepts (Behavioural) and Age would appear the most effective triad (5226).

The most effective combination overall is composed of both concepts variables, Visual Discrimination and Age (4988).

The overall finding of the above analysis, therefore, is the consistent superiority of the Concepts (Sand) variable in the regression model, and the relevance of the contribution of the Age variable, the Visual

Discrimination variable and the School (Social Class) variable, in combination with other significant variables.

Table 13 : The deviance values and corresponding degrees of freedom for the various combinations of predictor and classification variables for the sample as a whole, involving those variables identified as significant in previous analyses

Variables	Deviance	df
All	4671	120
Single Predictor:		
Concepts (Sand)	6517	127
Concepts (Behav.)	8528	127
Visual Discrim.	13120	127
Single Classification:		
Age	13810	126
School	22660	127
2 Variable Predictors:		
Concepts (Sand)/Concepts (B)	5841	126
Concepts (Sand)/Vis. Disc.	5920	126
Concepts (B)/Vis. Disc.	7759	126
1 Predictor + 1 Classification:		
Concepts (Sand)/Age	5426	125
Concepts (Sand)/School	6062	126
Concepts (B)/Age	7327	125
Concepts (B)/School	8149	126
Visual Disc./Age	9725	125
Visual Disc./School	13090	126

3 Variable Predictors:		
Concepts (Sand)/Concepts (B)/Vis.	5546	125
3 variables including classification and predictor variables:		
Concepts (Sand)/Concepts (B)/Age	5226	124
Concepts (Sand/Concepts (B)/School	5283	125
Concepts (Sand)/Vis. Disc./Age	5395	124
Concepts (Sand)/Vis. Disc./School	5495	125
Concepts (B)/Vis. Disc./Age	6787	124
Concepts (B)/Vis. Disc./School	7655	125
Concepts (Sand)/Age/School	5410	124
4 variables including classifiction and predictor variables:		
Concepts (Sand)/Concepts (B)/ Vis. Disc./Age	4988	124
Concepts (Sand)/Vis. Disc./ Age/School	5392	124
Concepts (Sand)/Concepts (B)/ Age/School	5161	124

The superiority of the Concepts (Sand) variable in the regression having been established in previous analyses within the present study, between School and Age differences on the regression on Concepts (Sand) were obtained. (See Table 14 below). The estimates, or slopes, produced indicate that while Concepts (Sand) is an important variable there appears to be no strong effect of Age and School on the regression, the estimates ranging from 2.16 to 2.57 with standard errors all around 0.2.

Table 14 : Regression coefficient on Concepts (Sand)

	School	
	A	B
5	2.22	2.16
6	2.13	2.33
7/8	2.44	2.57

These results indicate further the stability of the Concepts (Sand) variable, where similar slopes were produced in spite of the nature of the sample, and would appear to provide further evidence in support of the consistent importance of this variable in relation to reading progress. This would seem to have obvious educational implications for the necessary monitoring of the child's knowledge and understanding of the concepts of print from the earliest stages of learning to read.

RESULTS SECTION 1b

THE CHILD'S CONCEPTS ABOUT READING: THE "READING IS" PHOTOGRAPH TEST AND INTERVIEW RESPONSES

Decomposition : An Ode

Hark! 'Tis true
That Writing is Encoding
and reading what's been writ is
(Certainly)
Decoding.

But . . .

Doth one suppose
When reading what hath been composed
One's
Decomposing?

Walter G Prentice, Superior, Wisconsin 1984

Categorisation of interview responses

The childs conceptualisations of the nature and purpose of the activity of reading, as obtained through the informal "Reading Is" Photograph test interview (verbal responses), were categorised as follows, as used by Tovey (1976):

Category 1 : reading associated with *meaning*

Category 2 : reading as decoding

Category 3 : don't know, other responses.

The choice of categories will be discussed further in Section E, whilst the actual responses are presented in Appendix 6.

Table 15 below presents the findings in frequency terms for the sub-groups of School and Age of Categories of Response regarding concepts about reading.

School	Age	n	Cat. 1	Cat. 2	Cat. 3
A	5	21	2	8	11
A	6	22	5	11	6
A	7/8	28	3	22	3
B	5	15	0	4	11
B	6	14	2	5	7
B	7/8	29	10	8	11
N = 129					

Table 16 presents the findings in frequency and percentage terms for the Schools and the sample as a whole.

	n	Cat. 1		Cat. 2		Cat. 3	
		n	%	n	%	n	%
School A	71	10	14.1	41	57.7	20	28.2
School B	58	12	20.7	17	29.3	29	50.0
Total Sample	129	22	17	58	45	49	38

Table 17 presents the findings in frequency and percentage terms for the subgroups of Boys and Girls of Categories of Response regarding concepts about reading.

	n	Cat. 1		Cat. 2		Cat. 3	
		n	%	n	%	n	%
Boys	73	10	13.7	36	49.3	27	37
Girls	56	12	21.4	21	37.5	23	41.1

These findings make an interesting comparison with those of Tovey (1976) and Johns (1976, 1980) (See Section B4). Tovey obtained the following responses: 28% related reading to meaning (Category 1); 43% associated reading with decoding activities (Category 2) and 29% gave other responses (Category 3). However, direct comparison cannot be made, as Tovey's sample was small, n = 30, and the children were selected by their teachers for inclusion, the criterion for selection being unstated.

Differences between schools on category of response were found to be significant, using the chi-square test (χ^2 = 10.49), N = 129.

Differences between Ages 5 and 6 on category of response were not found to be significant, χ^2 = 5.6, N = 72.

Differences between Ages 5 and 7/8 on category of response were found to be

13/32. N = 93.

6 and 7/8 on category of response were not found

χ^2 = 1.26, N = 93.

and Girls on categories of response were not found

χ^2 = 1.89, N = 129.

the significances of between group differences on garding concepts about reading.

ɔol A v ɔol B	Boys v Girls	Age 5 v Age 6	Age 5 v Age 7/8	Age 6 v Age 7/8
*			*	

These results indicate an increase with age of the child's understanding that reading is a process of deriving meaning from print, where this is obtained through the child's competence in verbalization.

Whilst the conceptualisations themselves are language bound, and as such not truly represented, it was felt that the responses obtained provided the closest approximations possible in the circumstances.

Concepts About Reading : Photograph Selection

Table 19 presents the selection of photograph depicting reading for all the sub-groups.

	PHOTOGRAPH SELECTED					
	Correct	Inverted Print	Rabbit	Picture book	Television viewing	Other
	3	8	9	4	6	0
School A						
5 yr	11	9	1	0	0	0
6 yr	16	4	2	0	0	0
7/8 yr	20	7	1	0	0	0
School B						
5 yr	11	3	0	1	0	0
6 yr	8	4	1	0	1	0
7/8 yr	23	6	0	0	0	0
Boys	46	22	2	1	2	0
Girls	42	11	1	1	1	0

Photograph 3 was the correct selection, whilst Photograph 8 depicted inverted print; however it is considered probable that many of the children who selected photograph 8 failed to observe the inversion of the print on the photograph, as opposed to being unable to discriminate between inverted and conventional print, particularly in view of the item analysis presented in Appendix 6A. However the findings presented in percentage form in Table 20 below may be considered to support Clay's observation that 27% of a research group of 5 year olds did not detect inversion, and Clay's suggestion of an age expectation of 5:6 for correct responding to inversation of print.

Table 20

	PHOTOGRAPH SELECTED	
Age group	3 (correct)	8 (inverted print)
5	61%	33.3%
6	67%	22%
7/8	75%	23%
All	70%	25%

Selection of photographs 9, 4 and 6 would appear more significant, whilst comprising a sub-sample of only 7 children. As represented in Appendix 6A, these children fell within the lower half of the reading ability range for their particular sub-group of Age and School, and, as shown by their responses in the interview situation, were unable to perceive reading as a process of deriving meaning from print.

(Photograph 9 depicted looking at a white rabbit whilst holding an open book; photograph 4 depicted looking at a picture book, no print; photograph 6 depicted watching the television, book closed on lap).

Whilst the results are necessarily limited, conceptual and perceptual factors being compounded, chi-square analysis reveals no significant difference between age groups on selection of photographs 3 (correct) and 8 (inverted print) $\chi^2 = 2$, df + 2. Similarly no systematic differences were revealed between schools, or between Boys and Girls in selection of photographs 3 and 8.

In addition there appears to be a relationship between inability to recognise the activity of reading, inability to perceive reading as a process of deriving meaning from print, and reading disability. (See Appendix 6).

RESULTS SECTION 1c

A COMPARISON WITH THE FINDINGS OF THACKRAY ON FACTORS RELATED TO READING READINESS

As described in Section C4, a sub-group of the 5 year old children in the study completed the Thackray Reading Readiness Profiles during initial testing, and the Schonell Graded Word Reading Test one year later, in order that a direct comparison might be made with Thackray's studies of the relationship between factors considered to be related to Readiness for reading, in particular, visual and auditory discrimination abilities.

Table 21 below presents the correlations obtained in the present study between scores on the predictor measures Concepts (Sand), Visual Discrimination (Thackrays Reading Readiness Profile), and Auditory Discrimination (Thackrays Reading Readiness Profile) with the child's subsequent score on the Schonell Graded Word Reading Test one year after initial testing, for a sub-group of 5 year old children from School A, using Spearman's Rank Order Correlation with the correction for ties. The correlation value obtained between the Carver Word Recognition Test and the Schonell Graded Word Reading Test are also presented, Carver 1970, presenting correlations between .88 and .90 for these tests.

Predictor Measures	Schonell
Concepts (Sand)	.93
Visual Discrimination (Thackray's profile)	.91
Auditory Discrimination (Thackray's profile)	.78
Carver Word Recognition	.94
n = 17	

All three predictor measures were shown to correlate highly with reading achievement, with Concepts (Sand) yielding the highest correlation coefficient, .93, whilst the Fisher Z test reveals no significant difference between the correlations obtained for Concepts (Sand) and Visual Discrimination.

Table 22 below presents a comparison of the findings of the present study with those of Thackray (1964 and 1974) regarding correlations of Visual and Auditory Discrimination with reading achievement.

	READING ACHIEVEMENT		
	Present Study (Schonell)	Thackray (1964) (Southgate A)	Thackray (1974) (Southgate, Schonell and Neale)
Visual Discrimination	.91	.50	.48-.58
Auditory Discrimination	.78	.53	.46-.54

The high correlation coefficients obtained in the present study may be explained by a combination of the following factors: the small size of sample (n = 17); the frequency of high scores on both discrimination tests; and the effect of a large number of tied scores.

The Coefficient of Variation and the Sheard Index for the three predictor measures, as presented in Table 23 below, show how individual scores on the discrimination measures in the present study were clustered around high

levels with little variation whilst the scores on the Concepts (Sand) test were more evenly distributed, showing greater variation. The Coefficient of Variation was calculated by

$$\frac{\text{standard deviation}}{\text{mean}}$$

The Sheard index was calculated by

$$\frac{\text{mean}}{\text{maximum score}}$$

Table 23 : The Coefficients of Variation and Sheard Index values for the Thackray discrimination measures used in the present study.

	Coefficient of Variation	Sheard Index
Visual Discrimination	0.14	0.86
Auditory Discrimination	0.02	0.98
Concepts (Sand)	0.78	0.68

The above results would therefore lend strong support to the previous findings of the superiority of the Concepts (Sand) test in predicting reading progress.

Whilst high positive correlations were produced between visual and auditory discrimination abilities and reading progress in the present study, these values are suspect for reasons stated above.

The findings of the present study would therefore not appear to support Thackray's earlier findings that the measures of visual and auditory discrimination ability correlated most highly with reading achievement, and further, the present findings would question the validity of Thackray's measures of these discrimination abilities in the prediction of reading progress for the subjects in the present study. This would appear to lend support to Calfree's (1972) earlier findings of the failure of Reading Readiness tests in predicting reading progress, where they accounted for only 30% of the total variance.

2. Summary of Results

The results of the present study strongly support the hypothesis that a significant relationship exists between Reading Ability, as represented by word recognition ability, and conceptualisations about print in children between the ages of 5 and 8, where the predictor variable Concepts (Sand) was found to correlate most highly with the criterion variable (performance on the Carver Word Recognition Test). The results revealed the systematic superiority of the concepts variables over all other predictor variables, and systematic changes over age, the correlations becoming weaker as age increases. (Tables 8 and 9).

Significant between group differences on performance on the variables were found to exist between Schools (representing different social classes), consistently superior scores being obtained by School A children, and between Ages, with improvement with Age indicated. No significant sex differences were found to exist. However, the measures of Auditory and

Visual Discrimination ability did not appear to adequately reflect the individual differences. (Tables 6, 7 and 7a).

Using the 95% credible interval (Fisher Z test), statistically significant between group differences in correlation coefficients between predictor and criterion variables were indicated between schools on all but Concepts (Sand); between Ages 5 and 6 on Concepts (Sand) and on Intellectual Ability; and between Ages 5 and 7/8 on both concepts variables and on Visual Discrimination. No significant differences were found to exist between Boys and Girls.

Stepwise regression analysis revealed the consistent superiority of the variable Concepts (Sand), and the insignificant difference made by the introduction of other variables with the possible exception of the classification variable Age and the predictor variable Visual Discrimination. (Tables 10 and 11).

Developmental differences may be suggested in the observed variations in regressions for different Age groups, whilst no systematic differences were observed between Boys and Girls.

By omitting one variable at a time from the complete model, and by using the deviance values to assess the importance of the variables for reading ability, the consistent strength and superiority of the Concepts (Sand) as a predictor variable within the regression was further supported. The significance of the Age, Visual Discrimination and School (Social Class) variables was also indicated, and therefore these variables should not be

excluded from the model.

Using multiple regression analysis the predictor variables Concepts (Sand), Concepts (Behavioural) and Visual Discrimination plus the Classification variable Age presented the strongest predictive combination overall, (4788), assuming a linear regression, whilst Concepts (Sand) provided the single most powerful predictor (6517). Concepts (Sand) and Age provided the best pair of predictors. As Age is a known variable, the results suggest that performance on Concepts (Sand) alone might provide adequate information to successfully predict reading progress. (Table 13). However, as group trends do not necessarily apply to all individuals, the above results suggest that the possible importance of the Visual Discrimination factor should not be dismissed when considering the early reading behaviours of individual children or when planning pre-reading programmes.

Whilst the School variable did not present a good single predictor, it did appear to contribute to the regression in combination with other significant variables.

However, absence of any strong effect of Age and School on the regression further indicates the stability of the Concepts (Sand) variable, and its importance in relation to reading progress. (Table 14).

The present results therefore support the hypothesis that a child's understanding of concepts about print gives a significantly more valid prediction of progress in beginning reading than do either the child's

powers of auditory and visual discrimination ability, or his/her general intellectual ability.

A comparison with Thackray's studies (1964, 1972) did not appear to support Thackray's findings of the superiority of the correlations of Auditory and Visual Discrimination ability with reading achievement, whilst further indicating the superiority of Concepts (Sand). Furthermore, the fitness for use of the Thackray discrimination measures for predicting reading progress appears questionable in the present study.

An increase with age of the child's understanding that reading is deriving meaning from print was indicated, as was the possible relationship between inability to recognise the activity of reading, inability to perceive reading as deriving meaning from print, and reading disability.

E. CONCLUSIONS

"To completely analyse what we do when we read would almost be the acme of a psychologists' achievements, for it would be to describe very many of the most intricate workings of the human mind".

Edmund Burke Huey, 1908

1. Discussion of results

The results of the present study, using correlation analyses, appear to support the hypothesis that a significant relationship exists between reading ability, as represented by word recognition ability, and conceptualisations about print in children between the ages of 5 and 8 years. Furthermore, using multiple regression and stepwise regression analyses and assuming a linear regression, the results appear to support the hypothesis that a child's understanding of concepts about print gives a significantly more valid prediction of progress in beginning reading than do either the child's powers of auditory and visual discrimination or his/her general intellectual ability. The child's performance on the Sand test provided the best single predictor of reading progress, whilst the best group of predictors was shown to be performance on both the Concepts tests and the test of visual discrimination ability with knowledge of the age of the child. The best pair of predictors was shown to be Concepts (Sand) and Age. However, as age is a known factor, the results indicate that use of the Sand test alone should provide valuable educational information regarding reading readiness, as a transition from pre-reading to reading, and reading progress. Where the concepts about print are inadequate or inappropriate, early remediation may avoid subsequent reading disability. It might be suggested, therefore, that pre-reading programmes should profitably include those variables found to make a significant contribution to the regression, either singly or in combination with other variables, for example Visual Discrimination Ability. Implications of the present results for eductional practice are therefore indicated (to be discussed below).

The findings concerning the age factor merit further discussion. Whilst constituting a classification variable in the present study, the age of the child also appeared as a significant ($p = .01$) predictor variable within the regression (Table 12). Systematic reductions with age of correlation coefficient values between important predictor and criterion variables suggest that prediction of reading ability becomes increasingly difficult with age, using the variables in the present study, significant differences ($p = .05$) being found in the correlation values obtained between children of ages 5 and 7/8, using the Fisher Z test for credible intervals (Table 11).

This may suggest that other age-related factors, such as frequency and amount of voluntary and involuntary reading, may be more predictive of reading ability as the child gets older.

Whilst questions of validity might be raised concerning the use of Sand with the older children in the sample, the results pose further questions regarding the relative importance of concepts about print for reading ability for different ages of children: for example, are understanding of print-specific concepts important at age 5 but less important at age 7/8?; are more sophisticated tests of concepts about print required for use with older children? Johns (1980) suggests that factors other than age may influence or affect the acquisition of print-related concepts, and poses the question of whether the child's understanding of print-related concepts is a cause or a consequence of his/her reading achievement. Similarly Ehri (1979) states that awareness of concepts about print may interact with the reading acquisition process so that it exists as both a consequence of what

has occurred and as a cause of further progress in reading. Such considerations would appear relevant to the interpretation of the present results.

The possible developmental changes over age in the selected order of variables providing the best predictors of reading ability, assuming a linear regression (Table 17) may be considered to lend some support to the suggestion by Ehri and Wilce (1985) of a possible shift from visual cue processing to auditory cue processing during reading acquisition; however, this would require further investigation.

The consistent absense of significant sex differences within the present study may appear surprising in view of some recent research, for example Blatchford et al (1985) and Dunlop (1982) [See Section 3b]. Gender differences and related teacher expectations were not analysed in the present study, and may profitably have been investigated.

As previously mentioned (Section D2) the measures of Visual and Auditory Discrimination used in the present study appeared unsatisfactory, their 'fitness for use' being questionable in terms of distributions of scores which they produced, complicated by frequency of ties in scores, as represented by the Coefficient of Variation and the Sheard Index.

Hardy's (1973) suggestion that "with some of the popular tests of auditory discrimination, factors other than auditory discrimination are being measured" may be relevant. For example, poor listening ability, and the effects of dialect and accent, Trudgill (1975), may account for the

between-group differences obtained, in terms of possible developmental progress in listening ability with age, and in view of the fact that several School B children were more broadly accented, compared with School A children. Hearing ability and vision were not assessed or controlled in the present study.

Furthermore, in the light of recent research, for example Ehri and Wilce (1985) the perceptual measures used in the present study would not appear to assess the important perceptual processes possibly involved in learning to read. The need for further research using more appropriate measures is therefore indicated.

The results obtained in the comparison with Thackray's studies are also limited by distribution of scores and high frequency of ties in scores. Whilst indicating the superiority of performance on Sand in predicting reading progress, the results of the present study would seem however to question the 'fitness for use' of the Thackray Reading Readiness measures of perceptual discrimination for predicting reading progress for the subjects within the present study.

The finding that only 17% of the sample in the present study were found to consider reading as deriving meaning from print may have been influenced by several factors. In cognitive developmental terms, those children at the Piagetian stage of egocentricity may not be capable of understanding reading for meaning. Similarly, problems of verbalisation may have produced the responses obtained. The increase with Age of the child's understanding of reading as deriving meaning from print may in fact reflect

increased verbalisation skills rather than increased conceptual understanding.

The high incidence of selection of the inverted-print photograph may have resulted from not looking carefully enough, rather than inability to recognise the activity of reading; or from the assumption that an open printed page suggests reading. Both explanations involve conceptual/perceptual factors, which possibly require further investigation.

The results of the present study, whilst indicating the importance of the child's concepts of print and of reading itself for reading progress, need evaluating in terms of Mosely's (1977) suggestion that test scores reflect experience rather than ability in 6 year old children, and in terms of Steadman and Gipps (1984) criticism of testing, particularly of the out-of-date models of reading which underly many reading tests, and of the hidden messages and assumptions that are conveyed by the act of testing.

2. General discussion of the present study and implications

The contribution of reading research to education

Lovett (1981) suggest "Although correlational studies of reading achievement and various sub-skills have been conducted for decades, their impact in terms of reaching a clear understanding of the learning involved has been negligible". The present study, however, has attempted to be both descriptive, in terms of analysing as far as possible those conceptual,

linguistic, perceptual and intellectual factors previously considered important in beginning reading, and, on the basis of research evidence, to provide input into educational thinking and practice by possibly indicating approaches to the teaching of reading which are most likely to facilitate success in learning to read. The writer recognises, however, the need for further experimentation in this field before relevant educational procedures could be confidently suggested.

Definitions of reading underlying various reading tests and procedures

Marsh et al (1981) suggest that cognitive developmental theories of reading have often been unsatisfactory "as a result of the limited conception of reading which underlies standardised tests" (also see Section A2). Whilst a diversity of concepts of early reading underly the various tests within the present study, which may limit the inferences made, use of any group of tests may invite similar constraints. However, the present findings appear to advocate a definition of early reading in terms of concepts about print and about reading itself, as offered by Clay (1972): "a process by which the child can . . . extract a sequence of cues from printed text and relate these one to another so that he understands the printed message of the text".

Limitations in the testing procedures

Some basic limitations in the testing procedures used require explanation; firstly, the use of a test of word recognition as a measure of reading ability. Accepting Gibson and Levins (1975) definition of reading as a

varied and adaptive activity: "there are as many reading processes as there are people who read, things to be read and goals to be served", it would appear virtually impossible to composite all the possible reading processes into one test of reading ability, and therefore the researcher must necessarily choose one measure which most closely approximates the requirements of both the objectives of the study and the sample population. Whilst word recognition is usually associated with decoding, the importance of learning to recognise printed words rapidly and accurately is acknowledged as a skill related to reading development, in achieving fluency in reading comprehension, in a number of models of the reading process, Lesgold and Perfetti (1978); Stanovich (1980); Lesgold and Resnick (1982). Moreover, Stanovich (1980) states: "that readers who are slow in recognising words when sentence and other context is not available may compensate by relying very heavily on such context when it is available, and consequently may bave fewer cognitive resources available for higher order comprehension operations".

However, Steadman and Gipps (1984), point to the limitations of testing, particularly of the Schonell Graded Word Reading Test, a test of Word Recognition, considering it to be seriously out of date both in the model of reading which underlies it, and in the available norms. The test of word recognition, Steadman and Gipps suggest, represents "barking at print", provides no scope for judging comprehension, and very limited possibilities for diagnosis. Similarly, such tests are not in tune with todays reading goals which stress reading for meaning.

Steadman and Gipps (1984) conclude by indicating the danger of invalidity where a test seeks to assign a single measure to what is an aggregation of separate constructs. "Reading is a complex skill and many tests cover only one aspect, yet the score of the subskill measured is taken as representing the complex skill".

Lunzer et al (1976) adopted the Schonell graded word reading test "as the main index of mechanical reading efficiency" whilst also using Test one of the Standard Diagnostic Reading Tests (Daniels and Diack, 1958) and the Neale Analysis of Reading Ability (Neale, 1966), anticipating that these might provide "a less crude index of reading ability than the Schonell test which involves reading unrelated words". However, the intercorrelations of the three tests ranged between .946 and .954, suggesting that no advantage was to be gained in using the results of the other procedures. In the present study, correlation between the Schonell and Carver tests was found to be .94, whilst Carver obtained a correlation of .88 between these measures.

On balance it would appear, therefore, that whilst any measure of reading ability will necessarily be limited, the use of a word recognition test to provide such a measure may be acceptable where inferences and conclusions acknowledge this, as in the present study. The probability that a different measure of reading ability, as obtained for example by a test of reading comprehension, would yield results different from those of the present study needs to be considered.

However, in spite of the limitations of a word recognition score as a measure of "reading ability", the Carver test of Word Recognition was used in the present study as the most approximate and appropriate for the subject sample and for statistical analyses, whilst it is hoped that a more acceptable measure of Reading Ability will be available for use in future studies, as a clearer understanding of reading and of the learning processes involved in reading acquisition are evolved.

The Concepts About Print Tests

In the present study the Sand test appeared to provide a general measure of the child's concepts about print. The major obstacle in obtaining a valid measure of the child's understanding of the concepts would appear to lie in his/her ability or inability to verbalise responses: the child may have grasped the concept but may be scored otherwise.

The Concepts (Behavioural) Test avoided the problems of verbalisation; the pre-testing activities ensured that the child could perform the non-verbal responses required in the test. As 19 of Clay's 24 original test items constituted the Concepts (Behavioural) Test, including items 15 to 24 which Clay states should be administered to all children being tested, it was assumed that the Sand and Concepts (Behavioural) Tests could be considered parallel. Pilot studies appeared to support this view.

The Perceptual Discrimination Tests

The perceptual discrimination tests used in the present study did not appear to adequately identify or assess those skills which underly perceptual learning in reading acquisition, as advocated by Rosen and Ohmacht (1968). Similarly these tests did not allow significant discriminations between individual performances, their fitness for use thereby being questionable in the present study, as demonstrated by the Coefficients of Variation and the Sheard Index for these measures.

Hardy's (1973) suggestion that "with some of the popular tests of auditory discrimination factors other than auditory discrimination ability are being measured" may be relevant, for example, listening ability, as discussed above.

The writer would suggest, therefore, that development and use of more rigorous measures of perceptual processes involved in learning to read as considered for example by Ehri and Wilce (1985), might lead to improvement on the present study.

The "Reading Is" Photograph Test and Interview Responses

The success of the "Reading Is" Photograph Test relied upon the child's interpretation of the activity depicted in the photographs. The tendency was to scan, select and then consider, and where the "inverted print" photograph was selected this may have been more the result of scanning and not subsequently attending to detail than a conceptual inability to

recognise the activity of reading itself, as indicated in the test item analysis in the results section. Objections may be raised to using one child, a girl, in the photographs, in relation to identification by the subject; however, the writer attempted to control other variables such as choice-identification effects. The photograph test was considered valuable in introducing and stimulating interview responses relating to the child's concepts of the nature and purpose of the activity of reading.

The responses to "Reading Is" were placed in one of three categories according to reading for meaning, reading as decoding and other responses. Whilst the responses themselves yielded more detailed information regarding the child's thinking at the time, and could have been further sub-divided, placement into sub-categories would involve further subjectivity, complicated by overlap and by the problems of verbalisation. Many adults would have difficulties in succinctly describing the activity of reading! For the purposes of the present study, therefore, the three categorisations were used, whilst the actual responses provide interesting insight into the verbalized thinking of young children about reading (See Appendix 6).

Testing techniques

Testing techniques have obvious implications for the results obtained and conclusions which may be drawn, Goodman (1948). Ingham (1981) suggests that poor test performance may reflect the experience of a number of handicaps at the time of testing, such as mood, fatigue, influence of background noise, rapport. Moreover, these effects may or may not decrease developmentally. Whilst accepting the possibility of such effects, it was

attempted within the present study to control these as far as possible by implementing the maxims for research with young children as suggested, for example, by Thackray (1971). The writer considers Thackray's emphasis on the child's enjoyment of the testing procedure to be crucial, in that, on the basis of those elements within the present study which made use of the child's natural repertoire of responses, such as talking informally, discussing a story, drawing etc., in a natural and familiar setting, a wealth of information could be obtained about the young child's level of ability and understanding, particularly in conjunction with teacher observations. This needs to be weighed against the statement by Tizard et al (1982) that "even when experimentation is possible in natural settings, conditions cannot be controlled as in the laboratory, and validity is threatened in many ways". Researchers therefore need to address appropriate methods of data collection with young children: research evidence and intuition tend to support the use of informal procedures, a view expressed by March (1981): "The fact that a child gets an item correct or incorrect on a test sheds little light on the child's knowledge and strategies. It is only by devising more analytical tests that a child's knowledge and strategies can be revealed". Similarly, the fact that a child may respond correctly on a reading task by using a number of quantitatively different strategies which change with development requires consideration. This is met in part within the present study in the "Reading Is" Photograph Test and interview responses.

Whilst the questionnaire method of data collection is useful in obtaining certain kinds of information, the data itself is limited, its reliability being questionable. Particularly in areas of educational research,

expectations and consideration of standards are likely to influence the responses, as is the status of the questionnaire administrator and the degree of anonymity. Within the present study the questionnaire did not succeed fully in representing the level and importance of literacy in the home, and therefore provided little advantage to the researcher.

The effective control of variables

Southgate's view (1968) that "research workers have not controlled the many variables sufficiently well for valid results to be obtained", raises the question of whether the many variables can effectively be controlled, including those which may be built into the design of the study. Ingham (1981) points to the compounding of effects, test sophistication, and performance variability over re-testing, for example. Within the present study, whilst the approach to beginning reading and reading policy, as described by Head teachers and Reception class techers, was matched in the two schools, no measure was taken of the approach to the teaching of reading taken by other class teachers of children in the study, nor of the teachers' concepts of reading and their reading aims for their children, which may have significantly influenced the children's concepts and understanding of the activity of reading. Similarly, no control was made of children who may have attended other schools previously, or of children who might have had poor attendance records, both of which may have possible influence on reading ability level and concepts about print and reading itself.

Whilst it would have been preferable to conduct all the data collection within one period of time, thereby allowing more direct comparisons of age groups, the actual time-scale of testing was dictated by the necessary concern for limited disruption of classes and schools, and was considered to be the best in the circumstances.

Whilst every attempt was made to obtain 2 schools which were as different as possible in the social classes they served, in terms of catchment areas, the statistical figures of Local Authority ratings etc. are necessarily subject to fluctuation, particularly in the present times of economic and social difficulties affecting industrial and semi-industrial areas in which both schools are located. Overlaps necessarily occurred similar to the phenomenon of "regression towards the mean"; unemployment figures rose significantly in both schools during the testing period; whilst the emotional and motivational levels of the children were not assessed.

Order of presentation of tests was randomized for each subject, but the possibility that a particular order favoured a particular child may have posed an advantage for the child in some cases.

However, despite the limitations outlined above, an attempt was made within the design of the present study to control as many variables as possible in the circumstances.

3. Recommendations for classroom practice

The development of "Cognitive Clarity"

The implications of the present findings would appear to be far-reaching for classroom practice in the teaching of reading in the early years. Particular emphasis should be placed on facilitating and developing "cognitive clarity" regarding both print-specific concepts and the nature and purpose of the activity of reading as a process of deriving meaning from print. Teachers should consciously adopt a definition of reading which is appropriate to this aim, in order to eliminate the widespread idea amongst children, including older able readers, that reading is word recognition or decoding.

Through working with print, the pre-school skills of the beginner reader need to be transformed into new ways of responding, so that new reading behaviours of orientation, directionality etc., are learned through "developmental discontinuity". Print-specific skills, related to reading for meaning, should be learned and monitored through close observation and informal procedures as suggested by Clay (1979). Similarly, in order to avoid subsequent reading disability, reading difficulties should be recognised and remedied at an early stage, implying recognition of the possible different reasons for difficulty, for example a general immaturity in motor behaviour which might affect learning of movement patterns, or consistent but erroneous directional habits through wrong responses learned and practiced. Possible difficulties in verbalisation may be overcome by the use of non-verbal measures. Careful consideration of reading texts

used with beginner readers has been advocated, Clay (1972); Potts (1976). These should be simple and yet retain the full power of semantic and syntactic richness, helping the child to apply his/her abilities through his/her analysis on every level of language.

A focus on conceptual and visual perceptual abilities and skills

The findings suggest that the initial teaching of reading generally should focus on the conceptual, rather than perceptual abilities and skills of the beginner reader, whilst recognising firstly that for some individual children a perceptual disability might obstruct reading progress, for example a difficulty in making visual discriminations, and secondly that complex perceptual processes are possibly involved in reading acquisition, as suggested by Ehri and Wilce (1985). Research has suggested that the effectiveness for reading progress of pre-reading skills training programmes appears to be limited, particularly perceptual training programmes. However, as the results of the present study suggest that Visual Discrimination Ability makes a small but significant contribution to the predictor set, it would seem appropriate to introduce relevant visual discrimination elements perhaps related to print-specific skills into any pre-reading programme, whilst the development of concepts about print and about reading would constitute the main aim of the programme.

Moore (1983) suggests that educational practice has often been misguided through the misuse of reading research, in that describing the reading process differs from describing how learners acquire it. Moore suggests that the development and use of perceptual training programmes are one

example of the misuse of research, and advocates that "classroom practices should be validated through careful inspection of their theoretical rationales". Furthermore, and perhaps of greater importance, empirical evidence is required to support such "rationales". An emphasis on conceptualisations about print for meaningful reading would appear to have a sound theoretical base, via careful observations of the reading behaviours and concepts of beginner readers. Ideally, therefore, further controlled research should be undertaken in schools over a wider area in order to establish the causal nature of the relationship between conceptualisations about print and success in reading; where such a causal relationship is identified, appropriate educational action might be confidently suggested in terms of relevant pre-reading programmes and possible remediation procedures for children who are failing in reading.

The Language-Experience Approach

The language-experience approach to the teaching of reading, with its emphasis on the interelationship of reading and writing, would appear most appropriate for the development of emergent literacy in promoting the understanding that print conveys meaning, as recently suggested by Hall (1985). Combs (1984) suggests developing concepts about print with patterned sentence stories, actively involving groups of beginner readers in writing and reading activities that use skills which might otherwise have been taught in isolation or ignored. Wareham's (1982) recommendations for teaching reading skills through writing skills would seem appropriate, where the child learns, for example, that, quite the opposite of speech, text is a preplanned and logically organised set of ideas. Similarly Roney

(1984) suggests that young children must be exposed to book language before they can be expected to read it themselves; they must be encouraged to develop "an ear for those terms and structures found primarily in print . . . to become proficient readers".

The development of print-specific skills as suggested by Evans and Carr (1985) within a language-experience approach would therefore seem the optimum approach to the teaching of reading in the early stages, particularly where recognition is made of the possible significance of visual discrimination ability.

Pre-reading activities

The present findings would seem to support a "cognitive pre-reading curriculum" of activities aimed at developing an awareness of literacy functions and an enjoyment of print-related activities and experiences. (See Appendices 9 and 10).

The shared meaning of story would appear particularly valuable in the development of print-specific symbolic skills necessary for success in learning to read. Holdaway (1979); Smith (1978); Dixon (1984) and Wells (1982).

Similarly, the importance of home-school liaison and collaboration is indicated for pre-school pre-reading, for the transition from pre-reader to reader, and during the development of early reading progress. This collaboration should aim to ensure mutual aims, approaches and goals

throughout reading development and a consistency in "cognitive clarity" of parents and teachers regarding the purpose and practice of children's reading. In particular there appears to be a need for a continuation of the socialised reading characteristic of pre-school experience, as suggested by Hubbard and Salt (1975).

4. Recommendations for future research

Improving methods of data collection and assessment procedures

Whilst the Sand test provides a useful measure of a child's conceptualisations about print to age 7:0 it may be of value to further develop the test to improve its reliability, validity and application value. As Johns (1980) states, for example, only one item per concept is included in the original test on occasions. Also several important concepts, such as knowledge of a sentence, a paragraph or a story are not included. "Questions of validity may therefore be raised in terms of covering all the relevant content that may be important in a test measuring concepts about print". Where more advanced concepts may be incorporated into the test it may have wider application for use with children above the age of 7 years.

The measures of perceptual abilities used in the present study proved to have poor 'fitness for use' as indicators of individual variation, as shown by use of the Coefficient of Variation and the Sheard Index. Whilst these particular tests were selected for use on account of their appearing the most suitable of tests available for the sample population, they represent

rather outdated views of perceptual processes involved in learning to read. It would seem appropriate for future research to further investigate perceptual relationships in reading development, as, for example, the suggestion by Ehri and Wilce (1985) of a shift from visual cue processing to auditory cue processing during reading acquisition, with a view to devising a relevant assessment procedure.

Procedures to overcome verbalisation problems

Whilst the results of the present study did not indicate general verbalisation difficulties, no significant difference being found between the correlation coefficients for the concepts tests with the criterion variable, it might be suggested that difficulties in verbalisation may confront some individual young children. Future research might therefore profitably focus on the further development of non-verbal measures of concepts about print and reading, which might provide insight into the individual child's knowledge and strategies. Similarly more analytical procedures requiring verbal responses would help to reveal children's thinking about aspects of reading.

Concepts of reading : Teacher and parents and child

The teacher's own concept of reading and her reading aims for the children in her class might be considered influential in the children's development of concepts about print and reading. Research might investigate the effect of this on reading acquisition and reading progress.

Similarly the parent's concept of reading, of its nature and purpose in reference to the pre-reader and beginner-reader, might be an important factor in reading progress.

That several children associated reading with writing in their interview response may suggest possible value in further comparative investigations of the child's concepts of reading and concepts of writing, particularly in view of recent suggestions, Wareham (1982) of the importance of the child's understanding of the relationships and similarities between reading and writing.

The Population Sample

Whilst involving children from different catchment areas in the present study, the sample was obviously limited and generalisation of results should be necessarily tentative.

Further research might use larger samples drawn from various social/cultural/environmental backgrounds, including multi-cultural elements, which are not represented in the present study.

Pre-school experience and emergent literacy

Similarly, consideration of pre-school experience, including home-based, play-group and nursery experiences, relating to reading for meaning and general literacy experiences, could be further investigated in relation to success in reading acquisition and reading progress. Investigations of

pre-school children's concepts about print, using Sand for example, might be valuable in further identifying aspects of Reading Readiness and emergent literacy.

The Early Learning Environment : The home, the school and wider considerations

The school variable as used in the present study to represent Social Class, through an analysis of catchment area, would seem preferable to the more traditional Social Class ratings. (See Section 3a). However, the combined influences of home, school and catchment area would seem to require further investigation, as significant differences between schools were found to exist on many predictor measures ~~and on the criterion measure~~ in the present study, with the consistent superiority of performance of School A subjects.

Further investigation of the school variable might lead to the identification of contributing factors possibly resulting in relative disadvantage in reading. Such factors may have been influential in the test performances of School B subjects in the present study.

5. In Conclusion

Within the limits of the present study, the 'cognitive clarity' of the beginner reader in terms of concepts about print and the nature and purpose of the activity of reading, would appear to be significantly related to reading progress, where the beginner reader's understanding of the concepts of print appears to provide a more valid prediction of progress in reading

than do other variables previously considered important in reading acquisition and reading progress.

Whilst there is an obvious need for further research in this area in order to establish the possible causal nature of the relationship between the child's conceptualisations about print and reading progress, the results of the present study would suggest the inclusion of activities conducive to the acquisition of concepts about print and reading in any pre-reading and remedial-reading programmes. In addition, visual discrimination elements could profitably be included, whilst future research might attempt to identify the important visual discrimination abilities which are specifically related to the acquisition of print-specific skills and concepts.

Where inclusion of classification variables within the regression analysis might be considered advantageous, results of the present study suggest that the School variable, representing Social Class, should not be discounted in an analysis of possible predictive factors in beginning reading. Moreover, further investigation of Social Class factors relating to the influence of the home, the school and the catchment area on reading ability or on reading disadvantage might profitably be undertaken.

Definitions of reading which recognise the relationship between concepts about print and reading progress might profitably be adopted, so that within a rich language-experience learning environment, the beginner reader might acquire those print-specific skills, and an understanding of the functions of literacy, necessary for success in reading.

It would appear, in conclusion, that the convergence of the holistic and elements approaches to the teaching of reading, in reference to the learning of print-specific skills in reading for meaning, may promote the optimum form of Reading Readiness and may provide the most secure foundation for the child's success in reading.

APPENDIX 1

Department of Education and Science Statistical Bulletin July 1982. A Classification of Local Education Authorities by Additional Eductional Needs. A comparison of socio-economic indicators.

Indicators (as taken from the National Dwelling and Housing Survey 1978 and 1971 Census of population):

1. Children born outside the UK or belonging to non-white ethnic groups.

2. Children living in households whose head is a semi-skilled or unskilled manual worker or farm worker.

3. Children living in households lacking exclusive use of one or more of standard amenities, or living in a household at a density of occupation greater than 1.5 persons per room.

4. Children in one parent families.

5. Children in families with 4 or more children.

6. Pupils receiving free school meals in maintained schools (this was considered to be the best available proxy for a low income variable).

APPENDIX 2

"Social Class profiles" as identified in terms of various sociological factors relating to school catchment area and general sociological environment of the child.

Sources: LEA and School Records

1. Local Education Authority Social Priority Rating obtained for both schools A and B.

	School A	School B
LEA SPR	Nil	SPA 30

Further information: (LEA)

(i)

	School A	School B
% free school meals	6.6	20
% Group 2 socio-economic group occucpations (Registrar General's Groupings)	30	12

(ii) Nature of house ownership

	School A	School B
% privately owned homes	98	30
% rented homes	2	-
% council estate owned	-	-
% council estate rented	-	70

(iii) Nature of Father Occupation

	School A	School B
% professional/managerial	16	8
% skilled	30	12
% semi-skilled	30	25
% manual	20	25
% unemployed	4	30

APPENDIX 3

Checklist — The Teaching Of The Beginner Reader

1. Activities

Please tick against those items which form a significant part of the early teaching of reading in your school:

Listening games and tasks
Listening to a story
Talking about a story
Organized play
Play acting
Articulation activities e.g. rhymes, jingles
Visual discrimination tasks
(e.g. tasks to identify similarities and differences of shapes, words)
Aural discrimination tasks
(e.g. tasks to identify similarities and differences in sounds)
Visual sequencing tasks
Aural sequencing tasks (rythms)
Temporal sequencing tasks
Language-experience activities (related talking, drawing, writing etc.)
Lange development activities
(e.g. exploring through the senses, and talking related to this)
Personalised reading through booklets of the child's own writing
e.g. "My Family"
Letter formation/Handwriting practice
Tracing over and writing beneath teacher's writing
Left-to-right tracing/drawing/writing activities
Phonic games and activities
Look and say activities for word recognition
Child's personal word book or sound dictionary
Introduction to reading scheme through talking
Introduction of reading scheme books
(please identify which scheme(s) are introduced)

Children being allowed to take their book home.

Any other (please state)

2. Approach

1. Please tick against the approach to the early teaching of reading which best describes the approach used in your school:

A Language-Experience approach, using the child's own experience as source of material for talking, drawing, writing and reading.

B Phonic approach, teaching the sounds associated with letters and syllables.

C Look and Say approach, teaching a vocabulary of words by word recognition tasks (e.g. flash cards).

D Reading scheme approach, where the vocabulary is strictly limited in order to repeat the same word many times: (A variation of the Look and Say or sentence approach).
(Please state scheme(s) used).

E Mixed approach.
(Please give details).

F Other appraoch.
(Please specify).

2. How often do you read aloud to the class, i.e. story.
never
once a week
twice a week
three times a week
four times a week
five times a week
more than five times a week.

3. Materials

If significant use is made of any of the following in the early teaching of reading in your schools, please tick where appropriate.

Display (e.g. as a starting point or stimulus etc.)
Breakthrough To Literacy
Reading games (e.g. word-picture matching dominoes)
Library and/or book corner books
*Reading scheme books
/Reading scheme related materials (e.g. work books)
*Commercially produced packs e.g. "Language Centre"
*Audio-visual aids
Any other (please state)

*Please give details where appropriate:
Reading Scheme books:

Commercially produced packs:

Audio-visual aids:

4. Interview with Headteacher — Initial stages, 5 - 7/8 years

1. Intake of children into the Reception Class.

   Does this occur: (a) once a year
   (b) twice a year
   (c) three times per year
   (d) other

   Please specify.

2. Organization of children into class groups.

   (a) by age/year
   (b) vertical grouping
   (c) combination of (a) and (b)

   also

   (d) open plan
   (e) team teaching
   (f) separate classes
   (g) other (state)

3. In the early teaching of reading (5-7), does a change of emphasis take place at any stage?

   YES/NO.

   If YES = at what stage?

   Detail the change of emphasis:

4. Is there a planned policy in handwriting? YES/NO.

5. Are the children allowed to take their (reading) books home?

   YES/NO.

6. What proportion of capitation is laid aside annually for books and materials related to the teaching of reading?

7. Approximately how many books are there in the Infant Classes, (5, 6, 7 year olds i.e. 3 classes) excluding schemes?

8. Does your school run a school bookshop? YES/NO.

RESULTS OF CHECKLIST

Within the limitations of the checklist and the interview procedures, the results obtained suggested that the selected schools were suitably matched in initial approach to the teaching of reading:

All activities outlined in Section 1 were said to form a significant part of the early teaching of reading by reception class teachers of both schools. No other activities were stated in either case.

The approach to the early teaching of reading in both reception classes was described as a mixed approach of language-experience with word-recognition activities and a later introduction to phonics.

The reading of story was considered important by both reception teachers, and was undertaken five times a week in both cases.

Regarding provision and use of reading materials, both schools provided a variety of reading scheme material, with different schemes preferred for initial reading. Neither reception class used commercially produced packs, e.g. "Language Centre", and neither used audio-visual aids other than teacher produced flash-cards.

Breakthrough To Literacy was more widely used by one teacher than the other.

Regarding organisation of the children into classes, both schools operated a three-term entry into the reception classes. Classes in School A were organised by age; classes in School B were organised in a combination of year and vertical grouping.

Both schools were open plan and operated a system of combined class and team teaching.

No change in emphasis was considered to take place at any stage in the early teaching of reading in either school.

Both schools operated a planned handwriting policy, both using the Nelson handwriting practice books.

In both schools children were allowed to take their books home, although in both reception classes it was the practice to take "words" home.

A high proportion (60%-70%) of capitation was said to be laid aside annually for books and materials related to the teaching of reading in both schools.

School A ran a school bookshop, whereas School B did not at the time the study was undertaken.

APPENDIX 4

THE QUESTIONNAIRE: AN ANALYSIS OF PRE-SCHOOL HOME-BASED EXPERIENCE

A QUESTIONNAIRE FOR PARENTS OF CHILDREN IN SCHOOL

Dear Parent,

You co-operation, by completing this questionnaire, would be most helpful and greatly appreciated.

Thank you!

M K Sheard

* *

1. On leaving school were you able to:

   (a) find a job of work

   (b) go on to higher education (e.g. Technical College, Art School, University etc.)

   (c) neither

   (✓ as appropriate)

2. On leaving school was your husband/wife able to:

   (a) find a job of work

   (b) go on to higher education (e.g. Technical College, Art School, University etc.)

   (c) neither

   (✓ as appropriate)

3. Please give the position of your child in your family

   1st 2nd 3rd 4th 5th of 1 2 3 4 5 6

e.g.

   1st 2nd 3rd 4th 5th of 1 2 3 4 5 6

4. During the 2 years or so before starting school, how often did your child listen to stories being read?

   (a) nearly every day
   (b) once a week
   (c) once a month
   (d) less than once a month
   (e) never

   (✓ as appropriate)

5. Who used to read stories to him/her?

   (a) Mother
   (b) Father
   (c) Brother/Sister
   (d) other (state)

   (✓ as appropriate)

6. Which of these things did your child have of his/her own before going to school?

   (a) tricycle or bicycle
   (b) teddy bear
   (c) blackboard and chalks
   (d) paper and pencils
   (e) bucket and spade
   (f) books

   (✓ as appropriate)

7. If your child had books, about how many books did your child have of his/her own?

   (a) more than 20
   (b) 5 - 20
   (c) less than 5

   (✓ as appropriate)

8. Had your child been to any of these places before starting school?

   (a) a swimming pool
   (b) the pictures
   (c) a library
   (d) a zoo
   (e) a park

   (✓ as appropriate)

9. If your child went to a library, who were books borrowed for?

   (a) the child himself/herself
   (b) other child(ren)
   (c) Father
   (d) Mother
   (e) other (state)

   (✓ as appropriate)

10. Are any of your family members of a library at the present time?

(a) Yes
(b) No

(✓ as appropriate)

11. Do members of your family buy books?

(a) Yes
(b) No

(✓ as appropriate)

12. If they do buy books, about how often?

(a) once a week
(b) once a month
(c) once a year
(d) less than once a year

(✓ as appropriate)

13. Does anyone in your family regularly read a newspaper or magazine?

(a) Yes
(b) No

(✓ as appropriate)

14. Does your family take a newspaper?

(a) daily
(b) weekly
(c) sometimes
(d) not at all

(✓ as appropriate)

15. Does anyone in your family take a magazine?

(a) weekly
(b) monthly
(c) sometimes
(d) never

(✓ as appropriate)

16. How often does your child listen to stories being read at home, now that he/she has started school?

(a) nearly every day
(b) once a week
(c) once a month
(d) less than once a month
(e) never

(✓ as appropriate)

17. Do you think it is a good idea for a school to have its own book-shop?

(a) Yes
(b) No

(✓ as appropriate)

18. Does your child read at home?

(a) very often
(b) often
(c) sometimes
(d) hardly every
(e) never

(✓ as appropriate)

* * * *

The questionnaire was distributed to the mothers of the 5 year old children in the study in an attempt to assess the pre-school home-based experiences of the children regarding literacy, and to provide certain sociological information about the family as suggested by Ingham (1981) and Wells and Raban (1979). Fifteen questionnaires were returned by School A mothers and eight by School B mothers.

The results are presented in table form below, corresponding to the items within the questionnaire.

1. Incidence of Higher Education : Mother

School A /15	School B /8
6	0

2. Incidence of Higher Education : Father

School A /15	School B /8
4	1

3. Position of child in family

Pos.	School A /15	School B /8
1	9	5
2	6	1
3	0	2
4	0	0

4. Frequency of pre-school listening to story

	School A /15	School B /8
a	14	6
b	1	1
c	0	1
d	0	0
e	0	0

5. Readers of story to pre-school child

	School A /15	School B /8
a (Mother)	15	6
b (Father)	13	4
c (Sib)	0	1
d (other)	4	4

6. Incidence of Pre-school Personal possessions, c,d and f specifically literacy-related

	School A /15	School B /8
a	15	8
b	15	8
c	15	6
d	14	8
e	15	8
f	15	8

7. Number of books owned by child at pre-school age

		School A /15	School B /8
a	>20	11	5
b	5-20	4	3
c	<5	0	0

8. Places visited before starting school (General)

	School A /15	School B /8
a	14	7
b	9	3
c (lib)	12	7
d	12	7
e	15	8

9. Purpose of library visit(s)

	School A /15	School B /8
a (self)	12	7
b		
c		
d		
e		

10. Present membership of library (family members)

School A /15	School B /8
12	7

11. Purchasing of books

School A /15	School B /8
15	8

12. Frequency of book purchase (family members)

	School A /15	School B /8
a once a week	1	1
b once a month	10	7
c once a year	3	0
d less than once a year		

13. Regularity of newspaper reading (family members)

School A /15	School B /8
14	8

14. Regularity of newspaper purchase (family members)

	School A /15	School B /8
a daily	10	6
b weekly	4	1
c sometimes	0	1
d not at all	1	0

15. Regularity of magazine purchase (family members)

		School A /15	School B /8
a	weekly	5	2
b	monthly	4	1
c	sometimes	4	4
d	never	2	1

16. Regularity of listening to story at home at school age

		School A /15	School B /8
a	daily	10	3
b	weekly	4	3
c	monthly	0	1
d	<monthly	1	1
e	never	0	0

18. Regularity of child reading at home at school age

		School A /15	School B /8
a	very often	8	5
b	often	2	3
c	sometimes	5	0
d	hardly ever	0	0
e	never	0	0

Whilst statistical analysis of the above findings would seem inappropriate on account of the small size of the sample, the level of reliability of responses and subjective nature of the data, limitations inherent in the questionnaire method of data collection, some differences between the schools in the 5 year sub-groups may tentatively be suggested by observation of the data, as follows:

(1) a higher incidence of higher education in both mothers and fathers of children from School A;

(2) a wider variety of people who read stories to the pre-school child reported for children from School A;

(3) frequency of book purchase reported appearing higher in families of School B children;

(4) regularity of listening to story being read at home at school age greater for School A children;

(5) regularity of child reading at home apparently greater for School B children (although this response is dependent upon the respondents understanding of the terms used, e.g. 'very often', which may vary between individuals).

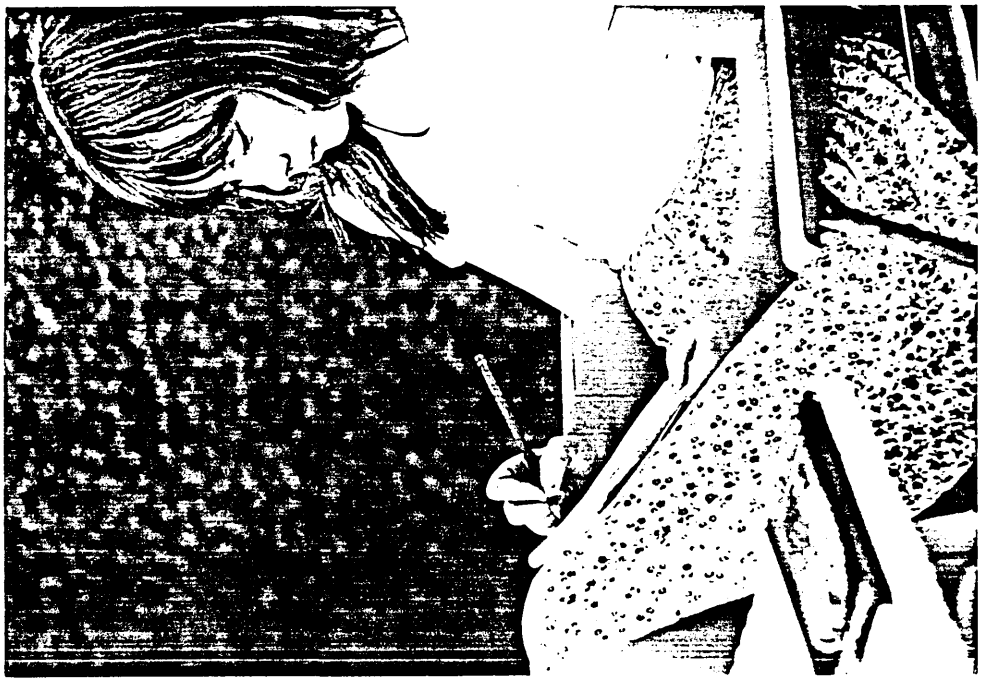
Whilst there appears to be no systematic differences in pre-school literacy experiences between children from the different schools, points (1) and (2) above would appear most significant, following the work of Wells and Raban (1979) and Ingham (1981) and might suggest some slight advantage in the children from School A. However, such suggestions must be necessarily cautious.

APPENDIX 5

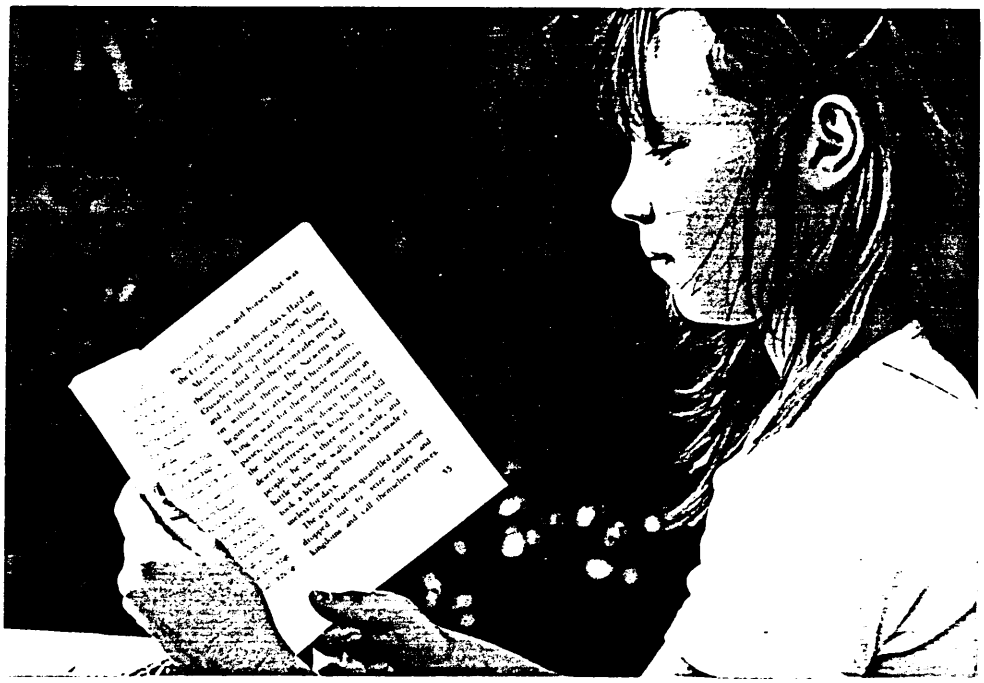
THE "READING IS" PHOTOGRAPH TEST

Photograph 1

Photograph 2



Photograph 3



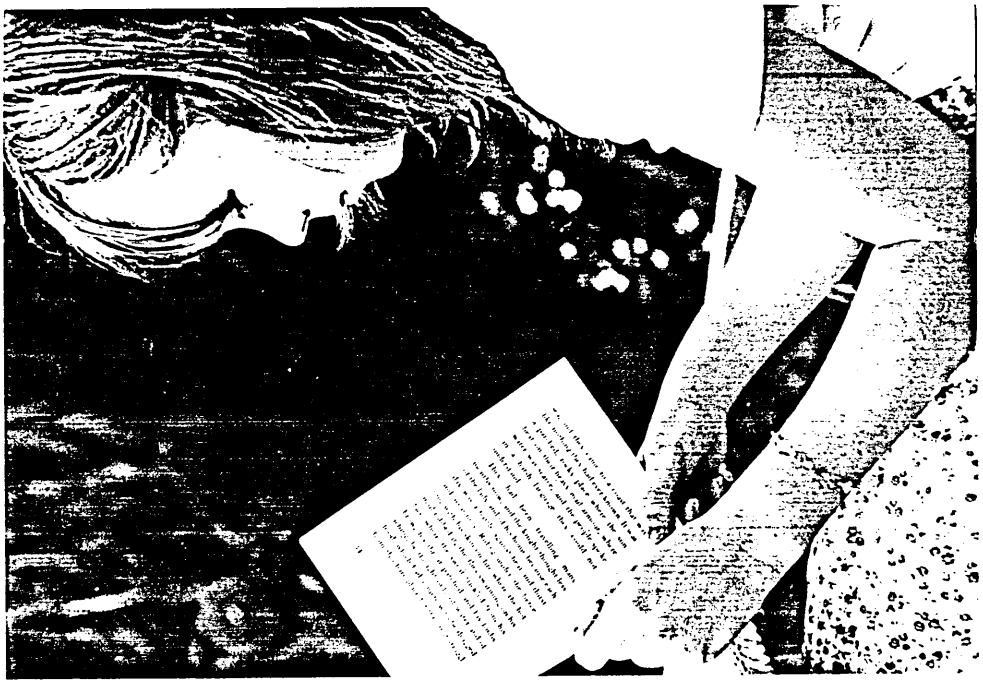
Photograph 4

Photograph 5

Photograph 6

Photograph 7

Photograph 8



Photograph 9

APPENDIX 6

CONCEPTS ABOUT READING : RESPONSES OBTAINED IN AN INFORMAL INTERVIEW WITH THE CHILD

5 Year Old Children, School A (n = 21)

1. Reading a book ... looking at the writing and she's holding it... look at the words.
2. Thinking ... about the book.
3. Saying words ... from the pieces of paper, the book.
4. Looking ... at a book ... writing ... carry on.
5. Looking at the words ... talk ... about what it is saying.
6. Looking ... at a book ... and she reads.
7. Looking at words ... reading it.
8. Looking at the book ... look at the words ... try to spell them if don't know them and read them if you do know them.
9. Reading ... talking ... looking at the top of the page.
10. Looking at a book ... look at the writing ... read it.
11. Looking at a book ... reading it in her head ... thinking ... about what it says.
12. Looking at a book ... reading ... looking at writing.
13. Reading ... book at the page with writing on it ... saying the words what it says on the paper.
14. Listen.
15. Looking at the book ... looks at the writing ... concentrate ... on the writing.
16. Reading ... learn ... reading.
17. - (no comment).
18. Sit down ... pick up a book ... open the book.
19. Thinking ... looking ... at the book.
20. Reading.

21. Looking at the book ... just holding the book.

5 Year Old Children, School B (n = 15)

1. Looking at a book ... reading it.
2. Reading ... looking at names.
3. Looking at a book.
4. Looking at a book.
5. Reading about photograph ... learns the words ... read words.
6. Reading.
7. Looking at words ... read it.
8. Reading it right ... asks her mum.
9. Looking at a book ... at the writing.
10. Looking ... at a book ... reading.
11. Reading ... looking at a book.
12. Saying the words ... from the book.
13. Looking ... at a book.
14. Holding the book ... looking at the book ... talks the words ... out of the book.
15. Looking at a book.

6 Year Old Children, School A (n = 22)

1. Looking at the book ... think in your head ... think about what it is saying.

2. You have a book ... reading the writing.

3. Holding the book ... looking ... at the book.

4. You talk (reading aloud) ... if she gets stuck on a word she thinks about it.

5. You talk ... you say what's written on the book ... (by) looking at it ... if you know the words you read them.

6. Reading a book ... read the words.

7. She is reading the words ... reading a book.

8. Looking at words ... to learn.

9. Thinking ... about a book ... spell the words out.

10. Holding a book ... looking at a book ... talk when you are reading.

11. Looking at the book ... I look at pictures because I cannot read ... look at the words ... you read it.

12. Say words and read letters out ... spell words out.

13. Talk, ... listen ... look at the pictures.

14. Looking at the pages ... read the letters.

15. Looking carefully ... at the words ... think ... about the words.

16. - (no comment).

17. Talk ... you think in your head ... about words.

18. You speak ... you talk, you look in a book and you read the words - or you could be reading off a sign.

19. Looking at the book well.

20. Look at the words and read them.

21. - (no comment).

22. Looking at the book ... read the words out.

6 Year Old Children, School B (n = 14)

1. Get a book first ... open it ... look at lines ... read words ... look at them.

2. Hold the book ... read the writing.

3. Don't know.

4. Looking at the book ... read the words ... so you know what's happening.

5. Open the book ... quiet ... talking.

6. Talk ... look at writing.

7. Talking ... have to concentrate ... on the words ... look at the words.

8. Holding the book ... its up ... reading the words ... get stuck sometimes.

9. Read the little words ... look at them ... think ... think if you don't know ... read to know the words.

10. Looking at a book ... be quiet ... writing.

11. Reading in your mind ... think ... about what it says. (I can't read).

12. Look ... at writing.

13. Look at the book ... look at the writing ... read it.

14. Holding a book ... reading it ... looking at the book.

7/8 Year Old Children, School A (n = 28)

1. Reading a book ... holding a book ... sitting down ... looking at words spelling them.

2. Reading a book ... saying what's in the book ... look at letters ... make words.

3. Looking at the words ... picking out what they say and reading the sentence ... and the sentences go into pages.

4. Looking at a book ... learning ... reads the words and knows how to spell them ... looks at full stops.

5. Looking at the words ... spell them out.

6. Holding the book ... looking at the words ... look at the first letter ... try and figure out ... thinking ... about what the book is of.

7. Looking at the letters.

8. Being quiet ... looking at words ... thinking what they are ... read them.

9. Reading the words ... look at the words and try and spell them out properly ... use your brain.

10. Reading ... words ... spell them out.

11. Looking at the book ... looking at the words ... sort of sounding them ... looking at what it says ... learning.

12. Look at the words ... say the words in your head.

13. Reading in your head ... think about the story that you are reading.

14. Get a book with lots of letters, that produces words and you just read what the words say ... learning the words.

15. You say words ... from the book ... on the pages ... you know them ... you can read it.

16. Reading a book ... got writing ... look at the writing ... make the sounds ... makes words ... get better at reading.

17. Looking at a book ... looking at the words ... turning the page ... say the words ... thinking ... about the words.

18. Reading the words in a book ... looking at the words ... see if you can read them ... turning pages over.

19. Looking at the words ... spell the sounds out.

20. Look at the words ... read them out loud ... put the letters ... put

the words together to make writing.

21. Look at the book ... at the words.
22. Start at the first letter and carry on reading the lines till you get to the other page ... you make out a word ... look.

23. Use her mouth ... open the book ... (look at?) the writing.

24. - (no comment).

25. Talking ... looking at the words ... turning the pages over.

26. Looking at the words ... thinking ... of the words.

27. She has opened the book and she is looking at it ... say the words to it ... if you don't know them (words) you've got to spell them out and that and do it again.

28. Reading a story ... look at the pictures ... what is happening.

7/8 Year Old Children, School B (n = 29)

1. Looking ... at a book ... holding the book ... looking at the writing ... to learn ... learning to read.

2. Looking to see what it's about ... learning to read ... it's telling her stories ... because it's got all the writing inside ... it's occupying her mind.

3. You look at writing ... must read all the pages and all the writing ... if you miss some of it out you won't understand it.

4. Read the words ... look at a book ... pronounce the words ... fit all the words together in your head ... then it makes a story. (N.B. reading aloud using phonics).

5. Telling it to yourself ... the story ... read it in your mind.

6. Listening to a story that's got some detail in it and it's good ... say it in your mind when you're reading.

7. Reading a story for fun ... read the words.

8. Looking at letters so she can read ... say them in your head ... think ... say them in your mind ... helps to read.

9. Read in your mind.

10. Talk ... looking at writing.

11. I don't know.

12. Reading a book ... looking at book.

13. Learning ... to read.

14. Reading a book ... read the words ... pronounce them ... to know the words
... it learns you about words.

15. Reading a story ... trying to learn ... to read ... holding and seeing the book.

16. Reading right way round ... learning ... think ... about words.

17. Putting her thumb where she is ... talk ... like saying the words ... its on the page what you're reading.

18. Learning to read ... reading for fun ... reading about what you have learnt ... learning you words.

19. I lose my word ... when people are chattering.

20. Reading a story.

21. Reading a book ... read the words ... sometimes get them wrong.
22. Making (her) eyes look at the book ... look at all the letters ... say what it is.

23. Thinking and looking ... about writing and letters.

24. Learn words ... think.

25. Read letters ... there's lots of different letters ... read them out ... say all the full letters ... spell letters out as well.

26. Looking at the book and spell out the words ... make the sound come out.

27. Thinking ... about the book ... read to my mum ... tell him what it says.

28. Thinking ... about letters ... in case she doesn't know them.

29. - (no comment).

APPENDIX 6A

TO DETERMINE THE RELATIONSHIP BETWEEN THE RESULTS OF CERTAIN TEST ITEMS, USING THE CONCEPTS AND PHOTOGRAPH TESTS.

School A 5 year Group Ranking Reading Ability (Word Recognition Score : Carver)

Sex	Carver	Photo No.	CONCEPTS (SAND) Inv. Pic.	CONCEPTS (SAND) Inv. Print	/24 Total	CONCEPTS (BEHAV.) Inv. Print	CONCEPTS READING CATEGORY	Inv.* Cat.
G	50	3	+	+	21	+	2	1
B	45	3	-	+	18	+	2	2
G	44	3	+	+	18	+	2	1
B	44	3	+	+	22	+	3	1
G	43	8	+	+	19	-	2	2
G	41	3	+	+	19	+	2	1
B	39	8	+	+	17	+	1	1
B	38	8	+	+	20	+	3	1
G	35	3	+	-	17	-	3	2
G	35	8	+	+	13	+	3	1
B	34	3	+	+	16	+	1	1
50%								
G	30	8	+	-	14	+	3	2
B	26	3	-	+	13	+	3	2
B	25	3	+	+	14	+	3	1
B	25	3	-	-	11	-	2	3
G	24	9	+	+	12	+	3	1
B	19	8	-	+	12	+	3	2
B	19	8	+	+	15	-	2	2
B	19	3	+	-	12	-	3	2
B	18	8	+	+	16	+	2	1
B	6	8	-	-	6	-	3	3

N = 21 Correlation value between Carver and Concepts Photo, r = .85

Correlation between Concepts (Sand) and Concepts Photo, r = .85

*Category 1 = All inversion items correct

Category 2 = Some inversion items incorrect

Category 3 = All inversion items incorrect

TO DETERMINE THE RELATIONSHIP BETWEEN THE RESULTS OF CERTAIN TEST ITEMS,

USING THE CONCEPTS AND PHOTOGRAPH TESTS.

School B 5 year Group Ranking Reading Ability (Word Recognition Score : Carver)

Sex	Carver	Photo No.	CONCEPTS (SAND) Inv. Pic.	CONCEPTS (SAND) Inv. Print	/24 Total	CONCEPTS (B) Inv. Print	CONCEPTS READING CATEGORY	Inv. Cat.
G	40	3	+	+	14	+	2	1
G	29	3	+	+	16	+	3	1
B	29	3	+	+	19	+	3	1
G	26	3	-	+	8	-	2	2
G	16	3	-	+	10	-	3	2
B	16	3	+	+	10	-	3	2
B	14	3	-	-	7	-	2	3
B	14	3	-	-	7	-	3	3
50% B	14	3	+	+	10	-	3	2
G	11	3	+	-	10	-	3	2
B	10	8	-	+	8	-	2	2
B	9	8	+	-	5	-	3	2
B	5	8	-	-	6	-	3	3
B	4	4	+	-	9	-	3	2
G	4	3	-	-	5	-	3	3

N = 15

TO DETERMINE THE RELATIONSHIP BETWEEN THE RESULTS OF CERTAIN TEST ITEMS, USING THE CONCEPTS AND PHOTOGRAPH TESTS

School A 6 year Group Ranking Reading Ability (Word Recognition Score : Carver)

	Sex	Carver	Photo No.	CONCEPTS (SAND) Inv. Pic.	CONCEPTS (SAND) Inv. Print	/24 Total	CONCEPTS (BEHAV.) Inv. Print	CONCEPTS READING CATEGORY	Inv. Cat.
	B	50	3	+	+	21	+	1	1
	G	48	3	+	+	22	+	2	1
	B	48	8	+	+	22	+	1	1
	G	44	3	+	+	22	+	3	1
	B	42	3	-	+	15	+	1	2
	B	38	3	+	+	18	+	2	1
	B	38	3	+	+	21	+	2	1
	B	37	3	+	+	17	+	1	1
	B	36	3	+	+	20	+	2	1
	B	35	8	-	+	13	+	2	2
	G	35	8	+	+	19	+	3	1
50%									
	G	35	3	+	+	18	+	3	1
	G	30	3	+	+	15	+	2	1
	B	30	8	+	+	17	+	3	1
	G	29	4	+	-	13	+	3	2
	B	28	3	+	+	18	+	2	1
	B	28	3	-	+	20	-	2	2
	G	28	3	+	+	13	-	2	2
	G	25	3	+	+	18	+	2	1
	G	25	3	+	+	17	+	1	1
	B	23	4	+	+	14	+	2	1
	G	16	3	-	-	10	+	3	2

N = 22

TO DETERMINE THE RELATIONSHIP BETWEEN THE RESULTS OF CERTAIN TEST ITEMS,

USING THE CONCEPTS AND PHOTOGRAPH TESTS

School B 6 year Group Ranking Reading Ability (Word Recognition Score : Carver)

Sex	Carver	Photo No.	CONCEPTS (SAND) Inv. Pic.	CONCEPTS (SAND) Inv. Print	/24 Total	CONCEPTS (BEHAV.) Inv. Print	CONCEPTS READING CATEGORY	Inv. Cat.
B	47	3	+	+	19	+	2	1
B	45	3	-	+	15	+	2	2
G	39	3	+	+	14	+	1	1
G	38	3	+	+	14	+	3	1
B	35	3	-	-	7	-	2	3
B	33	3	+	+	18	+	1	1
G	31	3	+	+	15	+	2	1
50%								
B	30	3	-	-	9	-	3	3
B	29	8	+	-	11	-	3	2
G	25	8	+	-	12	+	3	2
G	19	6	+	+	13	+	2	1
G	9	8	+	-	8	-	3	2
B	6	9	+	+	12	-	3	2
B	2	8	+	-	7	-	3	2

N = 14

TO DETERMINE THE RELATIONSHIP BETWEEN THE RESULTS OF CERTAIN TEST ITEMS,

USING CONCEPTS AND PHOTOGRAPH TESTS

School A 7/8 year Group Ranking Reading Ability (Word Recognition Score : Carver)

Sex	Carver	Photo No.	CONCEPTS (SAND) Inv. Pic.	Inv. Print	/24 Total	CONCEPTS (BEHAV.) Inv. Print	CONCEPTS READING CATEGORY	Inv. Cat.
G	50	3	+	+	21	+	2	1
B	50	8	+	+	20	+	2	1
B	50	8	+	+	20	+	2	1
G	50	3	+	+	23	+	1	1
G	50	8	+	+	22	+	2	1
G	50	3	+	+	21	+	1	1
B	50	8	+	+	18	+	2	1
G	49	3	+	+	21	+	2	1
G	49	3	+	+	21	-	2	2
B	48	8	-	+	19	+	2	2
B	48	3	+	+	22	+	2	1
B	48	3	+	+	20	+	2	1
B	47	3	+	+	20	+	2	1
B	47	8	+	+	21	-	2	2
50%								
B	46	3	+	+	21	+	2	1
G	46	3	+	+	19	-	1	2
G	46	3	+	+	19	+	3	1
G	45	3	+	+	22	+	2	1
B	45	3	+	+	17	+	2	1
B	45	3	-	+	20	+	2	2
G	44	3	+	+	21	+	2	1
B	41	3	+	+	19	+	2	1
B	40	3	+	+	14	+	2	1
B	40	3	+	+	17	+	2	1
G	38	3	+	+	15	+	3	1
B	33	9	+	+	16	+	2	1
B	29	3	+	-		+	2	2
B	25	8	+	+		+	3	1

N = 28

TO DETERMINE THE RELATIONSHIP BETWEEN THE RESULTS OF CERTAIN TEST ITEMS,

USING THE CONCEPTS AND PHOTOGRAPH TESTS

School B 7/8 year Group Ranking Reading Ability (Word Recognition Scores : Carver)

Sex	Carver	Photo No.	CONCEPTS (SAND) Inv. Pic.	CONCEPTS (SAND) Inv. Print	/24 Total	CONCEPTS (BEHAV.) Inv. Print	CONCEPTS READING CATEGORY	Inv. Cat.
B	50	3	+	+	20	+	2	1
B	50	3	+	+	21	+	2	1
B	50	3	+	+	21	+	1	1
G	50	3	+	+	20	+	3	1
G	50	3	-	+	22	+	1	2
B	50	3	+	+	21	+	1	1
G	50	3	+	+	20	+	1	1
G	50	3	-	+	22	+	1	2
G	50	3	+	+	17	+	1	1
B	50	3	+	+	22	+	2	1
B	50	3	+	+	18	+	2	1
G	49	3	+	+	20	+	1	1
B	49	3	+	+	19	+	3	1
G	49	3	+	+	18	+	3	1
G	49	8	+	+	19	+	1	1
50%								
B	48	8	+	+	18	+	3	1
G	48	3	+	+	21	+	3	1
G	48	8	+	+	21	+	2	1
G	47	3	+	+	21	+	1	1
B	47	8	+	+	20	+	3	1
B	45	3	+	+	14	+	3	1
B	44	3	+	+	14	+	3	1
G	43	8	+	+	13	-	2	2
B	42	3	+	+	18	+	1	1
G	40	8	+	+	20	+	2	1
B	33	3	+	+	14	+	3	1
B	32	3	+	+	12	+	3	1
G	23	3	+	+	19	+	2	1
G	22	3	+	-	9	+	3	2

N = 29

Table A6 presents sub-group performances and between group differences on inversion items in Sand and Behavioural tests, categorised according to all items correct (Cat. 1), all items incorrect (Cat. 3) and some items incorrect (Cat. 2).

Table A6	Cat.1		Cat. 2		Cat. 3		Significances of between group differences
	n	%	n	%	n	%	
Boys	45	62	21	29	7	9	
Girls	39	70	16	28	1	2	
Age 5	14	39	16	44	6	17	5v6: χ^2=5.6
Age 6	22	61	12	33	2	6	5v7/8: χ^2=51.2**
Age 7/8	47	82	10	18	0	0	6v7/8: χ^2=6.4*
School A	49	69	20	27	3	4	
School B	34	59	18	31	6	10	
* = significant at .05 level					** = significant at .01 level		

The above results suggest an improved performance on inversion items as the child gets older.

Also, analysis of the photograph choice (where Photograph number 3 was correct and photograph number 8 depicted inverted print), category of response for concept of reading, and category for performance in inverted items in the tests, indicates little relationship between them, although they appear to correlate increasingly with age.

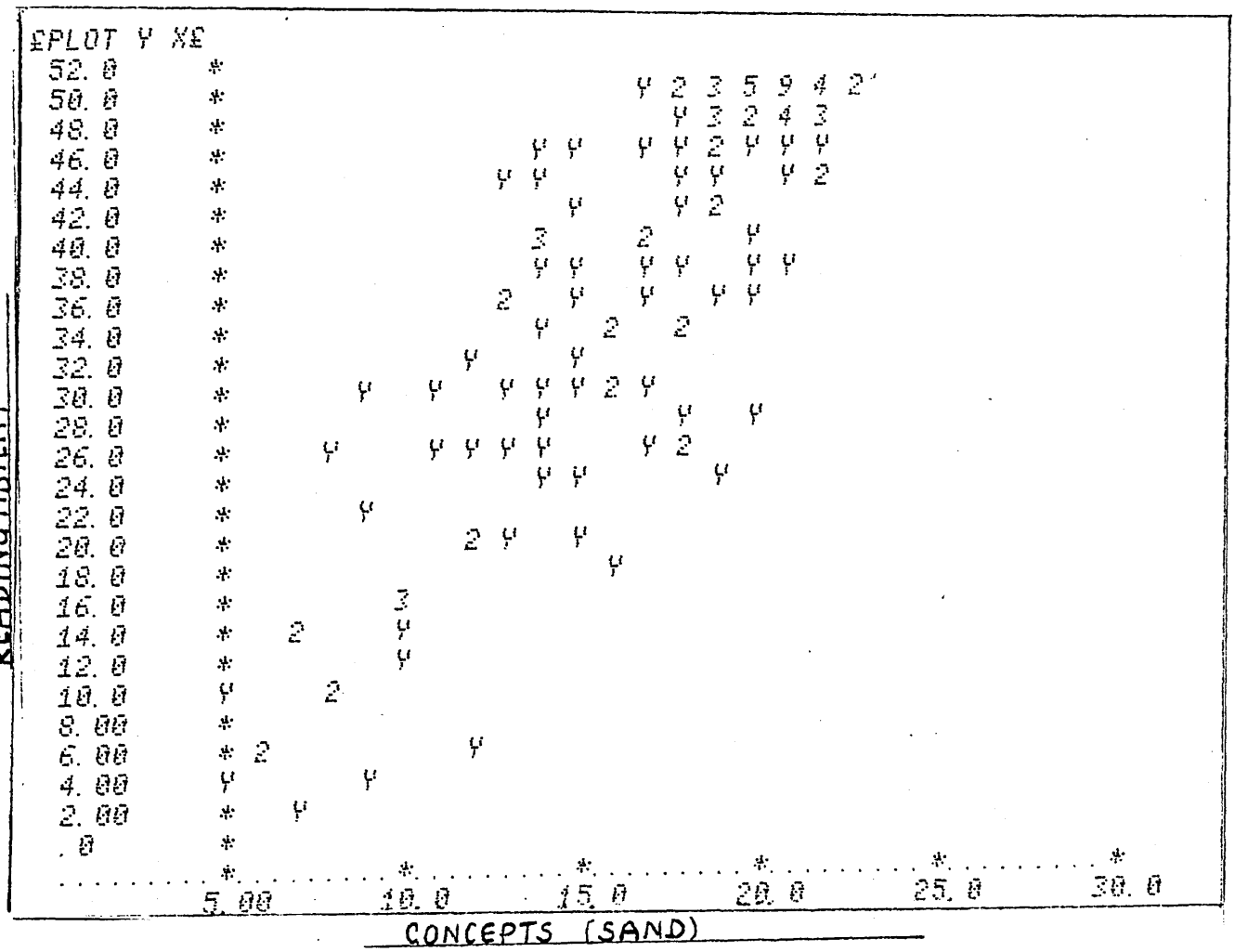
Choice of photograph number 8 may have resulted from the child failing to observe the inversion of print, rather than any inability or confusion regarding print.

Photographs other than 3 or 8 were selected by only 7 children in the total sample. These children all fell within the lower half of the reading ability range for their particular sub-group of Age and School. Of these children, 4 produced category 3 responses in the interview situation, and 3 produced category 2 responses, whilst 4 of the children produced category 1 responses on the inverted items, whilst 3 produced category 2 responses on these. The relationship between understanding of the purposes and activity of reading and inversion of print therefore remains little understood. However, as might be expected, children who could not select either photograph number 3 or 8 did not perceive reading as a process of deriving meaning from print.

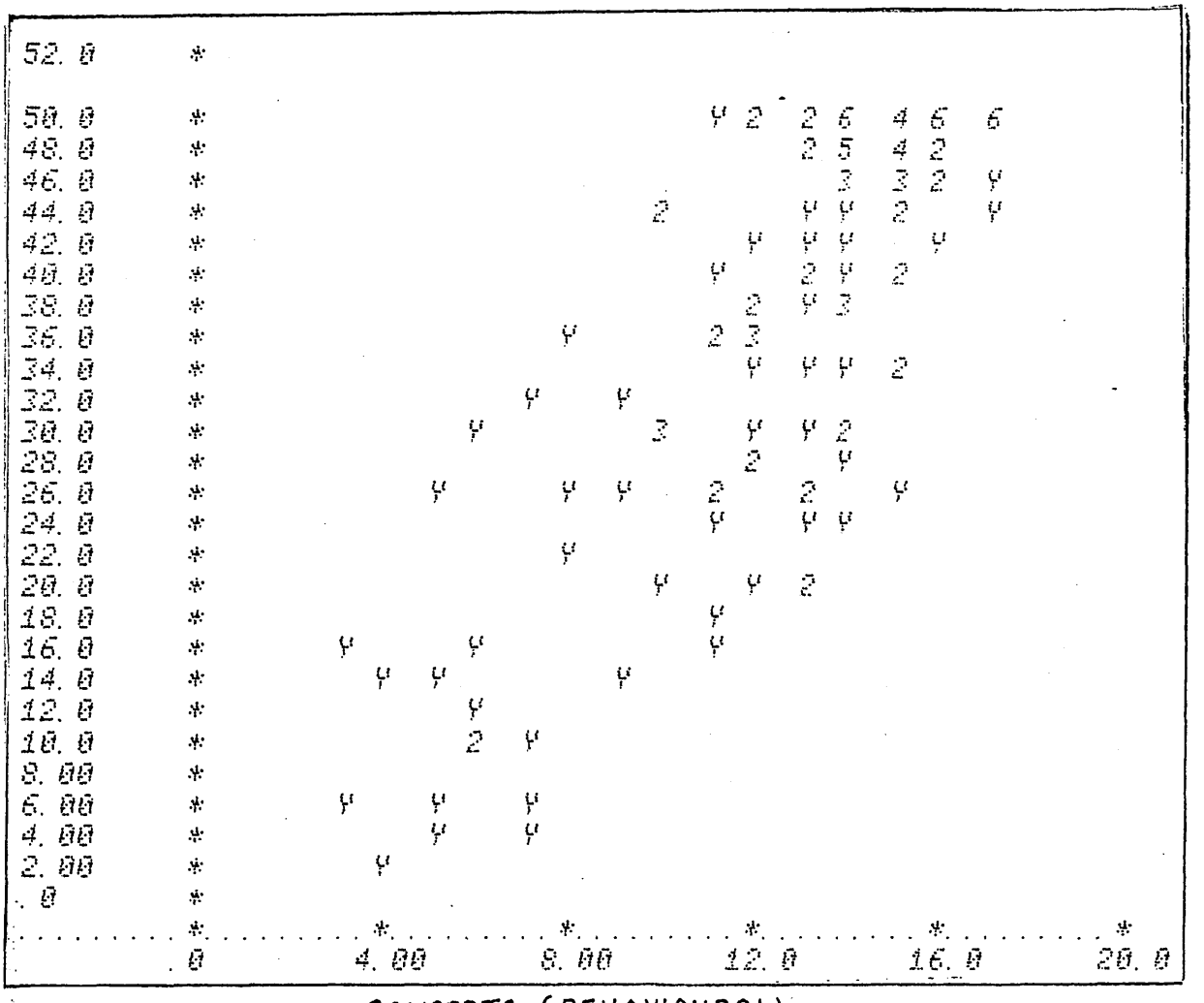
APPENDIX 7

THE PLOTS OF THE FITTED RELATIONSHIPS OF PREDICTOR VARIABLES ON THE CRITERION VARIABLE

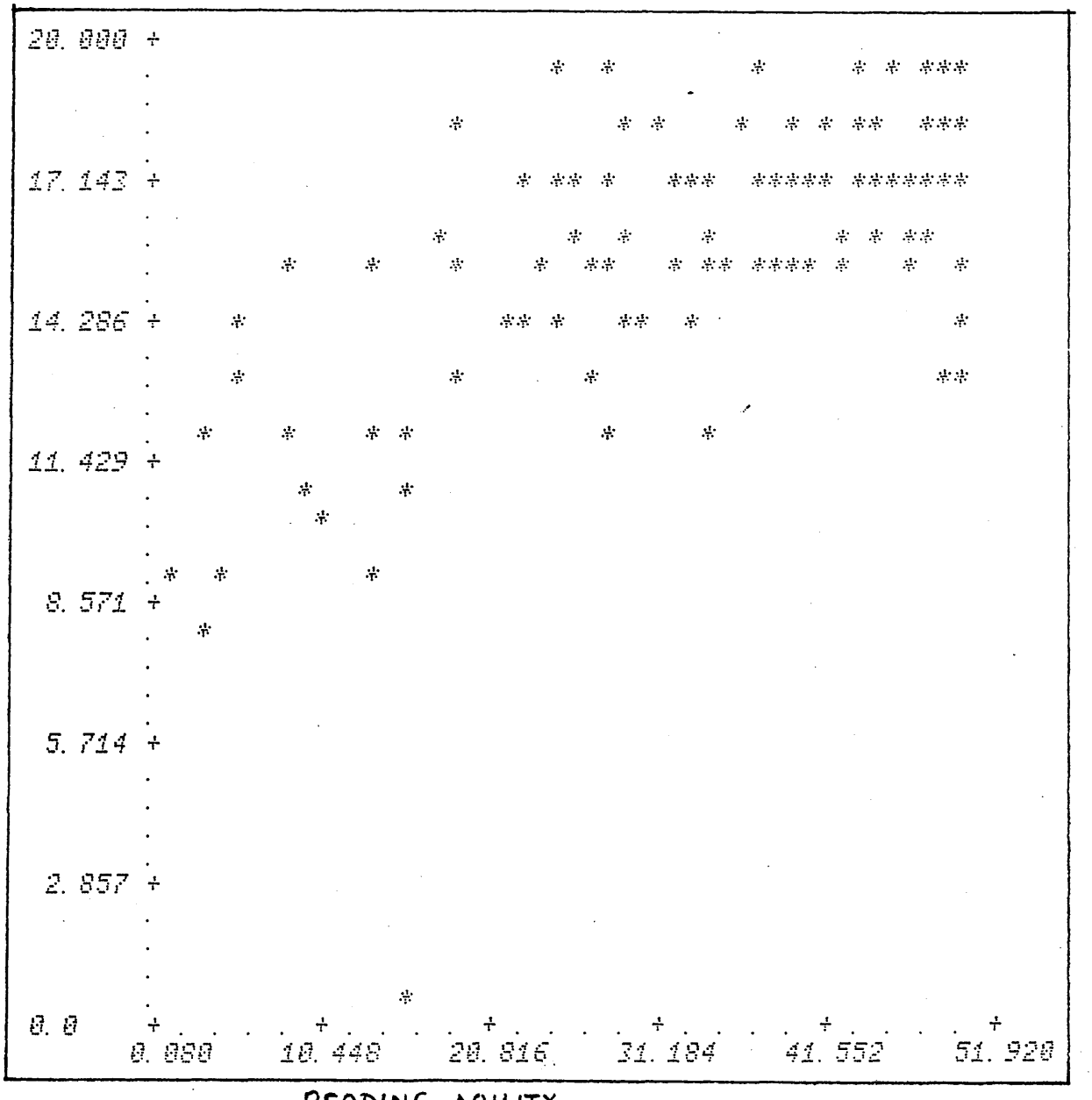
1. Reading Ability and Concepts (Sand)



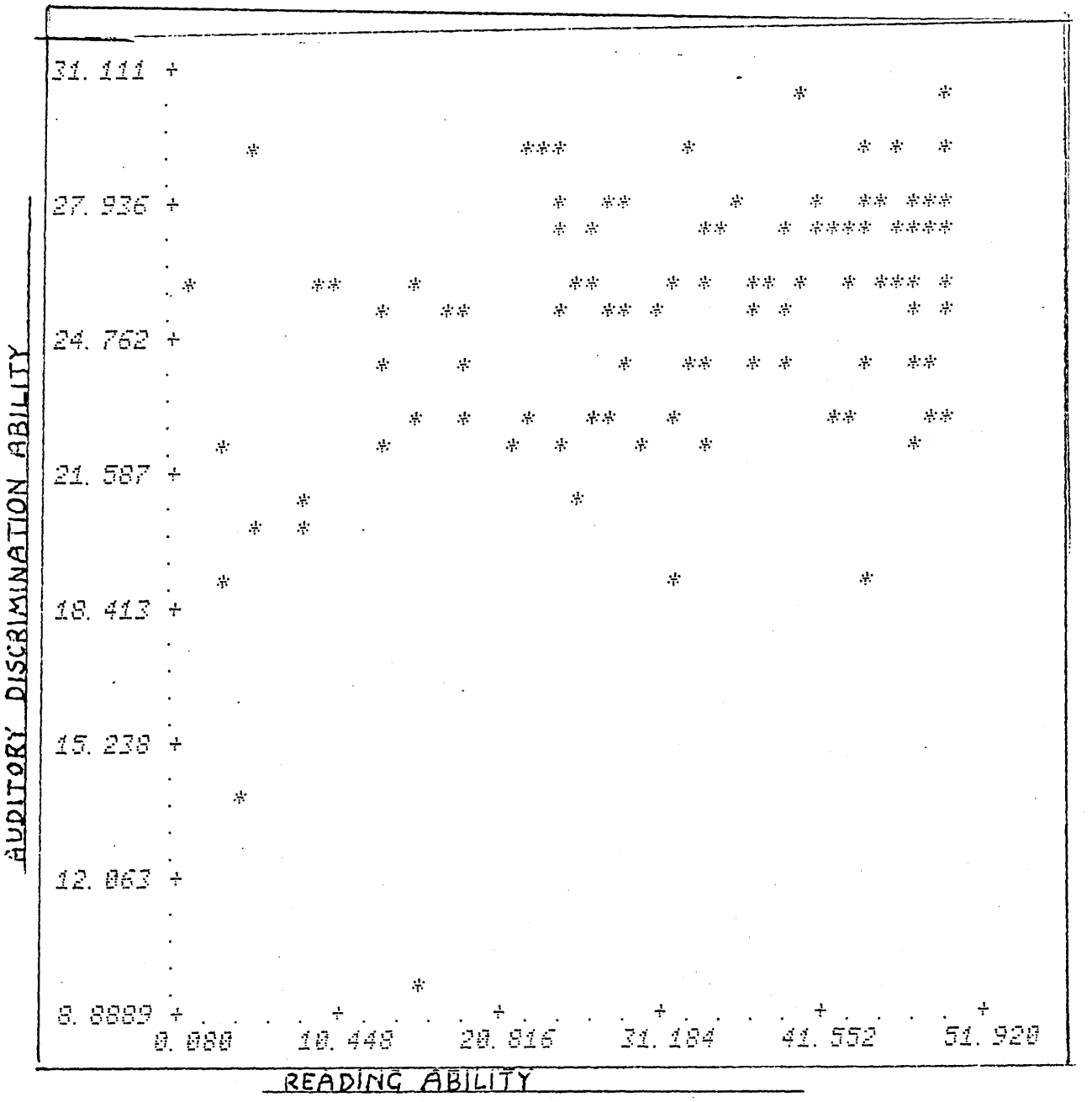
2. Reading Ability and Concepts (Behavioural)



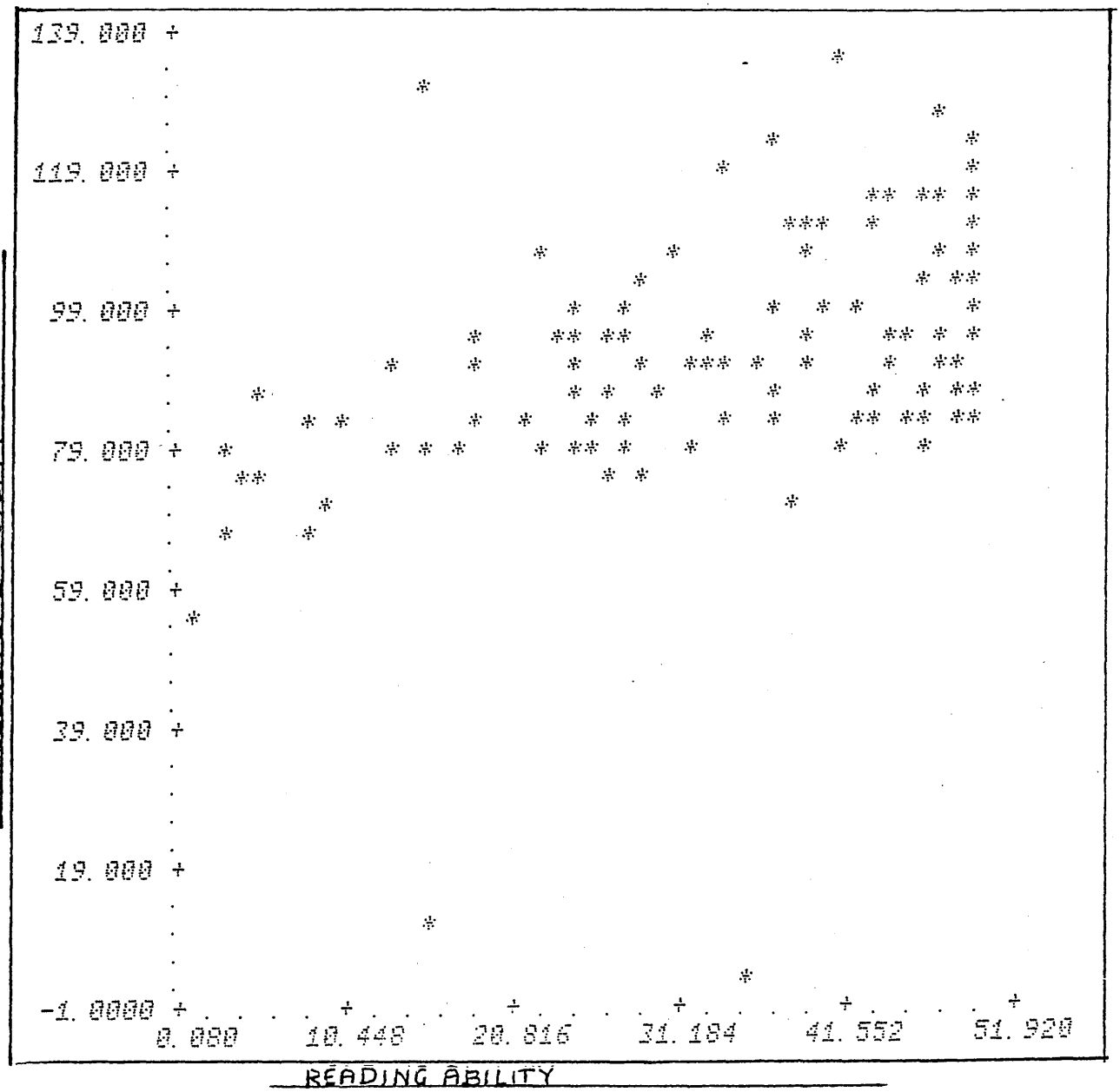
3. Reading Ability and Visual Discrimination Ability



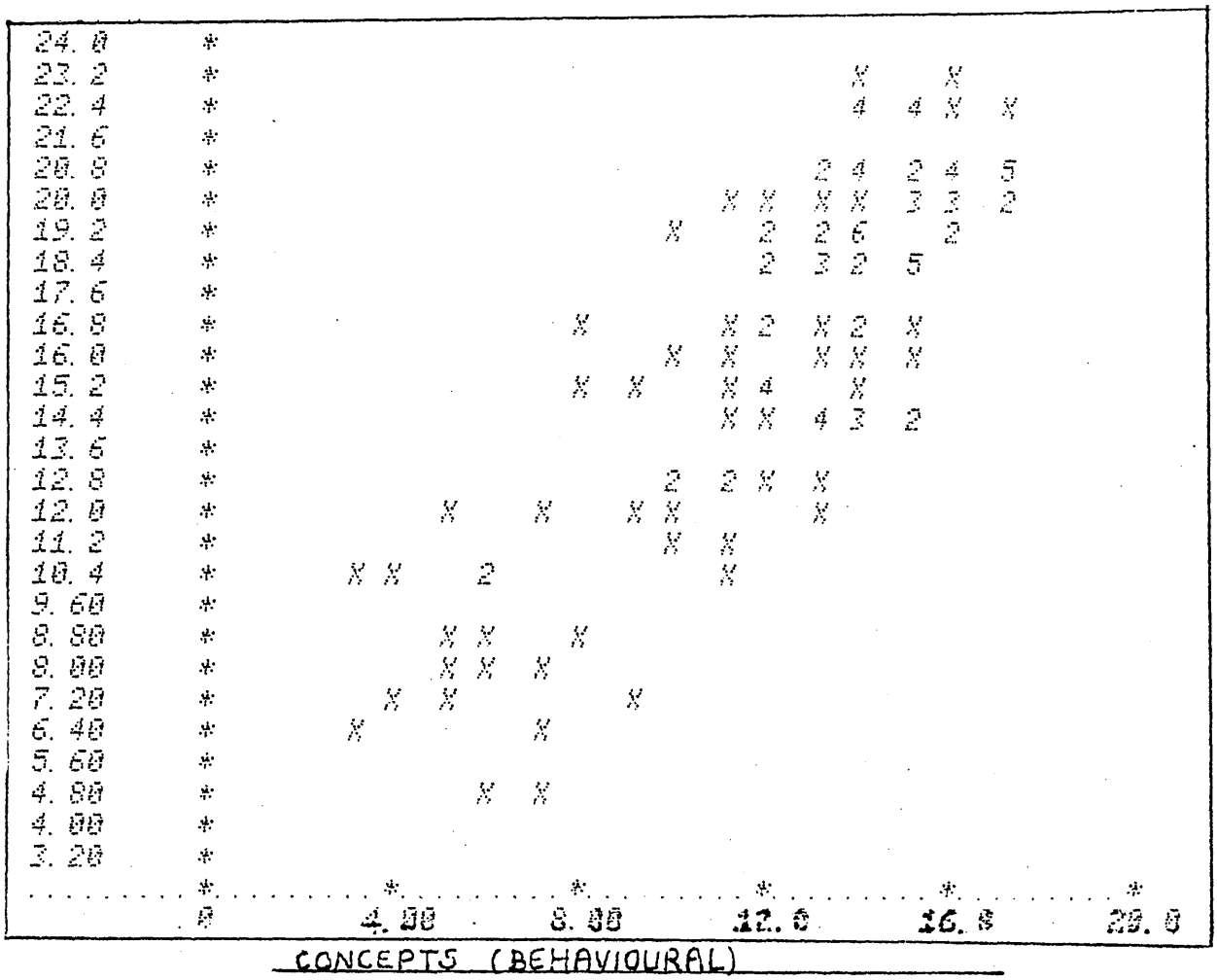
4. Reading Ability and Auditory Discrimination Ability



5. Reading Ability and Intellectual Ability



Plot of the fitted relationship of the predictor variables Concepts (Sand) and Concepts (Behavioural)



APPENDIX B

DEVIANCE VALUES AND CORRESPONDING DEGREES OF FREEDOM FOR THE VARIOUS COMBINATIONS OF PREDICTOR AND CLASSIFICATION VARIABLES FOR THE SAMPLE AS A WHOLE

The deviance values and corresponding degrees of freedom for the various combinations of predictor variables and classification variables, through least squares estimation of the coefficients within the relationship, for the sample as a whole.

	Single Predictors	Deviance	D.F.
	Concepts (Sand)	6517	127
	Concepts (Behav.)	8528	127
	Visual Discrim.	13120	127
	Auditory Discrim.	19390	127
	Intell. Dev.	19760	127
	Classification Variables		
	Age	13810	126
	Sex	13960	127
	School	22660	127
	2 Variable Predictors:		
a	Concepts (Sand)/Concepts (B)	5841	126
	Concepts (Sand)/Vis. Disc.	5920	126
	Concepts (Sand)/Aud. Disc.	5466	126
	Concepts (Sand)/Intell. Dev.	6328	126
b	Concepts (B)/Vis. Disc.	7759	126
	Concepts (B)/Aud. Disc.	8333	126
	Concepts (B)/Intell. Dev.	8407	126
c	Visual Disc./Aud. Disc.	12800	126
	Visual Disc./Intell. Dev.	11610	126
d	Aud. Disc./Intell. Dev.	16380	126
	Conjunction of 1 Predictor Variable with 1 Classification Variable		
a	Concepts (Sand)/Age	5426	125
	Concepts (Sand)/Sex	6494	126
	Concepts (Sand)/School	6062	126
b	Concepts (B)/Age	7327	125
	Concepts (B)/Sex	8382	126
	Concepts (B)/School	8149	126

c	Visual Disc./Age	9725	125
	Visual Disc./Sex	13060	126
	Visual Disc./School	13090	126
d	Aud. Disc./Age	11970	125
	Aud. Disc./Sex	19070	126
	Aud. Disc./School	19370	126
e	Intell. Dev./Age	11990	126
	Intell. Dev./Sex	19360	126
	Intell. Dev./School	19260	

3 Variable Predictors

a	Concepts (Sand)/Concepts (B)/ Vis. Disc.	5546	125
	Concepts (Sand)/Concepts (B)/ Aud. Disc.	5822	125
	Concepts (Sand/Concepts (B)/ Intell. Dev.	5769	125
b	Concepts (B)/Vis. Disc./ Aud. Disc.	7514	125
	Concepts (B)/Vis. Disc./ Intell. Dev.	7583	125

3 Variables including Classification Variables with predictor variables

a	Concepts (Sand)/Concepts (B)/ Age	5226	124
	Concepts (Sand)/Concepts (B)/ Sex	5829	125
	Concepts (Sand)/Concepts (B)/ School	5283	125
	Concepts (Sand)/Vis. Disc./ School	5495	125
	Concepts (Sand)/Aud. Disc./ School	5915	125
	Concepts (Sand)/Intell. Dev./ School	5967	

b	Concepts (B)/Vis. Disc./ Age	6787	
	Concepts (B)/Vis. Disc./ Sex	7711	125
	Concepts (B)/Vis. Disc./ School	7655	
	Vis. Disc./Concepts (Sand)/ School	5495	125
	Vis. Disc./Aud. Disc./School	12800	125
	Vis. Disc./Aud. Disc./Age	9382	125
	Vis. Disc./Intell. Dev./Age	8546	125
	Vis. Disc./Sex/Age	9656	125
	Concepts (Sand)/Age/School	5410	124

3 Classification Variables

	Age/Sex/School	16660

APPENDIX 9

Suggestions most frequently made for parent reading involvement. Carol Vukelich, 1984 "Parents' role in the reading process: A review of practical suggestions and ways to communicate with parents".

Activity or behaviour	Number of times suggested out of 24
Read to your child	22
Be a good literate model	14
Provide books, magazines etc for the child to read	13
Build a reading atmosphere at home (place, time)	11
Talk and listen to your child	7
Exemplify a positive attitude toward reading, including praising your child for reading	7
Provide experiences for children that are reading related, eg library trips, or that can be used to stimulate interest in reading	7
Read environment signs; capture reading opportunities in the environment	5
Provide contact with paper and pencils	4
Be aware of your child's interests	4
Point out similarity and differences in objects in the environment	4

Vukelich suggests the following ways of communicating with parents about reading:

Booklets and handbooks, brochures or pamphlets;
Activity sheets;
Progress letters, notes and conferences;
Reading and shopping list;
Courses and workshops;
"Calendar" of activities eg an activity each day;
Open door policy, or open invitation to come and observe reading activities in school;
Home learning kits;
Reading advisory councils. (Criscuolo, 1980 describes how some principals/head teachers set up reading advisory councils, composed of parents and teachers, to review the reading program and link home and school).

Vukelich concludes that educators should be encouraged to continue and develop their parent involvement efforts.

APPENDIX 10

"A personal view of early reading", The Reading Teacher 37, 6, Feb 1984 Thelma Zirkelbach director of a clinic specializing in reading, speech, and language disorders in Houston, Texas.

As a consultant to a number of pre-schools, Zirkelbach has been concerned with programs and pressures of early reading. She recommends the following program for pre-school reading:

reading to children;
helping them create language experience stories;
drawing their attention to the wealth of reading material around them;
providing them with materials and activities for reading and writing as they desire them;
engaging them in experiences to increase their vocabularies, stimulate their thinking, and enable them to develop as individuals;
encourage them in whatever interest they may show in written language;
allow them the freedom to read when and if they are ready.

- that is "a relaxed, individualized language arts approach". Zirkelbach concludes "We must seriously question a system which pushes children fast and then brands them as failures".

The approach outlined above would appear to be relevant and sympathetic to the findings of the present study.

Table I : Iho intercorrelations between predictor variables and the criterion variab1e Tor the sub-groups Age 5, Age 6 and Age 7/8■

	Concepts S	Concepts B	Vis. Dis.	Aud. D1s.	Intell. Abil.
Concepts S	1.00				
Concepts B	V-OX	1.00			
Vis. Die.	ft,57	0. 67	1.00		
Aud. Dis	0.35	0.A7	0. 59	1. 00	
Intell. Abi 1.	0»44	fttA1	0.18	-0. 11	1.00
Criterion Variab1e Carver	0. B8	0. B1	0. 62	0.26	Q.44

N = 36

Concepts S	1. 00				
Concepts B	0.71	i .00			
Vis. Disc.	0. 53	0. 53	1.00		
Aud. Disc.		0. 43	0 .63	1.00	
Intel!. Abil.	0. 003	0 . 15	-0. IS	-0. 27	1«00
Criterio*n variable Carver	0. 73	0. 71	0. 50	0. 44	0. 08

N = 36

Concepts 3	1.00				
Concepts B	0.66	1.00			
vis. Disc.			1.00		
Aud. Disc.	0 .44	0 .2S	0.17	1.00	
Intell. Abil.	0.27	-0.001	0 .03	0 .26	1.00
Criterion variable f.arvor	**0**, 64	0. 42	0. 31	0. 26	**0. 20**

]N = 57

Table I presents between-group differences for the sub-groups Age 5, Age 6 and Age 7/8 on intercorrelations between the predictor and criterion variables.

The data may be summarized as follows:

1. For all sub-groups (Age 5, Age 6, Age 7/8) the predictor variable Concepts (Sand) correlates most highly with the criterion variable (.88, .73, .64 respectively).

2. For all sub-groups the predictor variable Concepts (Behavioural) has the second highest correlation value with the criterion variable (.81, .71, .42 respectively).

3. For all sub-groups the predictor variable Visual Discrimination has the third highest correlation value with the criterion variable (.62, .50, .31 respectively).

4. For sub-group Age 5, the predictor variable Intellectual Ability correlates more highly with the criterion variable (.44) than does the predictor variable Auditory Discrimination (.26).
   However, for sub-groups Age 6 and Age 7/8 the reverse was found to be the case (Auditory Discrimination .44, .26; Intellectual Ability .08, .20).

5. The correlations between predictor and criterion variables are higher in Age Group 5 than in Age Group 6, and are least in Age Group 7/8.

6. For sub-groups Age 5 and Age 6, the correlations of other predictor variables with the predictor variable Concepts (Sand) were found to be similar for: Concepts (Behavioural) (.82, .71) and Visual Discrimination (.59, .53) but for: sub-group Age 5 Intellectual Ability was found to correlate more highly (.44) than Auditory Discrimination (.35) whilst for sub group Age 6, the reverse was found to be the case (Auditory Discrimination .32, Intellectual Ability .003).

7. For sub-group Age 7/8, Concepts (Behavioural) was found to correlate most highly with Concepts (Sand) (.66), followed by Auditory Discrimination (.44), Intellectual Ability (.27) and Visual Discrimination (.24).

8. The correlations obtained between Visual Discrimination and Auditory Discrimination were not high for each of the sub-groups, and particularly low for sub-group Age 7/8 (.17).

9. Intellectual Ability was found to have low correlations with all other predictor variables for all sub-groups.

Whilst the above points present a detailed analysis of the findings, the main trends which are revealed are the systematic superiority of the concepts variables over all other predictor variables, and the systematic changes over age, where the correlations become weaker as the age increases. This latter trend may be as a result of other possible reading-related variables which may assume greater importance in reading

development as the child gets older, for example reading comprehension and speed of word recognition. A practice effect may be introduced, in that the predictor measures investigated may reflect the pre reading and early reading work of younger children, with a focus on discrimination and concepts tasks, to a greater extent than the current reading activities of the older children in the sample. Also the Sand test, being standardized on young children, 5:0 to 7:0 years, may decrease in validity when used with children of increasing ages, a view which may be supported by the overall higher means and lower standard deviations obtained (see Table 7).

Table II : Inter Correlations between predictor variables and the criterion variable for the sub groups School A and School B.

		Concepts S	Concepts B	Vis. Disc.	Aud. Disc.	Intell. Abil.
SCHOOL A	Concepts S	1.00				
	Concepts B	0.66	1.00			
	Vis. Disc.	0.45	0.44	1.00		
	Aud. Disc.	0.25	0.30	0.17	1.00	
	Intell. Abil.	0.20	0.31	0.11	0.10	1.00
	Criterion Variable : Carver	0.81	0.68	0.42	0.22	0.25
	N = 71					
SCHOOL B	Concepts S	1.00				
	Concepts B	0.87	1.00			
	Vis. Disc.	0.69	0.71	1.00		
	Aud. Disc.	0.43	0.37	0.56	1.00	
	Intell. Abil.	0.49	0.50	0.29	0.08	1.00
	Criterion Variable: Carver	0.88	0.86	0.75	0.46	0.50
	N = 58					

Table II presents the inter correlations between predictor and criterion variables for the sub-groups School A and School B.

The data may be summarized as follows:

1. For both sub-groups (School A and School B), the predictor variable Concepts (Sand) was found to correlate most highly with the criterion variable (.81, .88 respectively).

2. For both sub-groups the predictor variable Concepts (Behavioural) yielded the second highest correlation with the criterion variable (.68, .86) followed by Visual Discrimination (.42, .75), Intellectual Ability (.25, .50) and finally Auditory Discrimination (.22, .46).

3. Regarding the predictor variables, for School A Concepts (Behavioural) was found to correlate most highly with Concepts (Sand) (.66), followed by Visual Discrimination (.45), Auditory Discrimination (.25) and Intellectual Ability (.20). Whilst a similar pattern emerged for Concepts (Behavioural) and Visual Discrimination for School B (.87 and .69 respectively), Intellectual Ability was found to yield a higher correlation with Concepts (Sand) than was Auditory Discrimination (.49 and .43 respectively).

4. The correlations between Auditory Discrimination and Visual Discrimination were found to be low, particularly for School A (.17).

5. The correlations between Intellectual Ability and the other predictor variables were found to be low for both schools, and particularly for School A (Range .31 to .10).

The phenomenon of higher correlations overall in School B was produced. The Fisher z test reveals that the differences in correlation coefficients between the schools for predictor and criterion variables are significant for the variables Visual Discrimination Ability, Concepts (Behavioural), Auditory Discrimination Ability and Intellectual Ability, (see Table 9a). As significant between-school differences were found to exist on the

Concepts measures and on measures of Visual and Auditory Discrimination (see Table 7a), and as the mean values for School B were systematically inferior to those of School A (see Table 7), the phenomenon might possibly be explained by higher correlations being produced by inferior test performances, whilst other variables, such as higher order cognitive skills of comprehension, may compound effects in superior test performances. Similarly whilst an attempt had been made to control for initial approach to the teaching of reading in the schools, the tasks within the measures may have more closely reflected the teaching of reading in one school than in the other.

Table III : Inter Correlations between predictor variables and criterion variable for the sub-groups Boys and Girls.

		Concepts S	Concepts B	Vis. Dis.	Aud. Dis.	Intell. Abil.
BOYS	Concepts S	1.00				
	Concepts B	0.81	1.00			
	Vis. Disc.	0.68	0.73	1.00		
	Aud. Disc.	0.40	0.33	0.37	1.00	
	Intell. Abil.	0.29	0.37	0.31	0.15	1.00
	Criterion Variable: Carver	0.85	0.80	0.70	0.36	0.34
	N = 73					
GIRLS	Concepts S	1.00				
	Concepts B	0.86	1.00			
	Vis. Disc.	0.58	0.59	1.00		
	Aud. Disc.	0.44	0.45	0.54	1.00	
	Intell. Abil.	0.47	0.52	0.16	0.005	1.00
	Criterion Variable: Carver	0.83	0.80	0.63	0.45	0.46
	N = 56					

Table III presents the inter correlations between predictor and criterion variables for the sub-groups Boys and Girls.

The data may be summarized as follows:

1. For both sub-groups (Boys and Girls) the predictor variable Concepts (Sand) was found to correlate most highly with the criterion variable (.85, .83 respectively), followed by Concepts (Behavioural) (.80, .80), and Visual Discrimination (.70, .63).

2. Boys yielded higher correlations between the criterion variable and the predictor variables Concepts (Sand) (.85), and Visual Discrimination (.70) than did Girls (.83 and .63 respectively), whilst both sub-groups yielded correlations of .80 between the predictor variable Concepts (Behavioural) and the criterion variable. However, these differences between boys and girls were not statistically significant.

3. For Boys, Auditory Discrimination yielded a higher correlation with the criterion variable than did Intellectual Ability (.36 and .34) whereas for Girls the reverse was the case (Auditory Discrimination .45, Intellectual Ability .46). However, these differences between boys and girls were not statistically significant.

4. Regarding the predictor variables for both sub-groups Concepts (Behavioural) correlated most highly with Concepts (Sand) (.81 and .86), followed by Visual Discrimination (.68 and .58). For Boys Auditory Discrimination yielded a higher correlation with Concepts (Sand) than did Intellectual Ability (.40 and .29), whereas for Girls the reverse was found to be the case (Auditory Discrimination .44, Intellectual Ability .47).

5. The correlations between Auditory and Visual Discrimination were found to be low, particularly for Boys (.36).

6. The correlations between Intellectual Ability and other predictor variables were found to be low for both sub-groups, and particularly for Boys (Range: .37 to .15 for Boys; .52 to .16 for Girls).

Overall, no systematic differences were found to exist between Boys and Girls.

Table IV : The effect of stepwise regression of predictor variables on the criterion variable for the sub-groups of Ages 5, 6 and 7/8.

Step			Variable Selected	Sum of Squares Reduced			F for this variable			Cumulative sum of squares reduced			Mult. Correl.		
5	6	7/8		5	6	7/8	5	6	7/8	- 5	6	7/8	5	6	7/8
1	1	1	Concepts (Sand)	5625.324	2548.923	1371.393	118.059	38.888	40.967	5625.324	2548.923	1371.393	0.88	0.73	0.64
2	5	2	Visual Discrim.	133.568	11.173	43.019	3.556	0.198	1.554	6053.539	3202.833	1762.457	0.91	0.81	0.73
3	4	5	Intell. Ability	119.504	59.069	0.040	3.657	1.100	0.001	6279.941	3177.810	1799.492	0.93	0.81	0.74
4	3	4	Auditory Discrim.	34.679	74.058	1799.315	1.063	1.374	0.662	6314.617	3118.742	1799.315	0.93	0.80	0.74
5	2	3	Concepts (Behav.)	15.113	363.571	18.303	0.455	6.403	0.657	6329.727	2912.494	1780.760	0.93	0.78	0.73

Table IV shows the effect of stepwise regression of predictor variables on the criterion variable for the different sub-groups of Age, in which the predictive power of the Concepts (Sand) variable is clearly demonstrated for all sub-groups, yielding multiple correlation values of .88, .73 and .64 for the 5, 6 and 7/8 sub-groups respectively.

For each Age sub-group, the reduction of sum of squares and cumulative sum of squares decreases considerably with each step, and particularly after Step 2.

Between-group differences in the stepwise regression may suggest that different variables assume greater significance developmentally.

Whilst Concepts (Sand) was selected at the first step in the regression for all Age sub-groups, Visual Discrimination was selected at Step 2 for Age 5 and Age 7/8, whilst Concepts (Behavioural) was selected at Step 2 for Age 6, and Visual Discrimination not selected until Step 5 for Age 6.

The intercorrelations presented in Table 9 have relevance to Table IV. That Visual Discrimination was selected at Step 2 for Ages 5 and 7/8, and not Concepts (Behavioural), as might be expected, may be explained as a result of the similarities and intercorrelations between Concepts (Behavioural) and Concepts (Sand) (.82 and .67 respectively), and their relatively low correlation with Visual Discrimination (.60 and .24 respectively), whilst Visual Discrimination correlated with the criterion variable at .62 and .31 respectively (See Table I).

However, for Age 6, Visual Discrimination was found to be less powerful, and as a result of the relatively low correlations between Concepts (Sand) and Concepts (Behavioural) (.70) and their relatively low correlations with Visual Discrimination, (.53) Concepts (Behavioural) was introduced as the second most powerful variable for this age group.

The multiple correlation values are shown to be highest for sub-group Age 5 and lowest for sub-group Age 7/8. For the latter group it is probable that other reading-related and developmental factors may have an effect, for example, two or three years of successful or unsuccessful reading instruction within school.

The results presented in Table IV indicate, therefore, that prediction becomes increasingly more difficult with age.

Table V : The effect of stepwise regression of predictor variables on the criterion for the sub-groups School A and School B.

Step		Variable Selected	Sum of squares reduced		F for this variable		Cumulative sum of squares reduced		Mult. Correl.	
School A	School B		School A	School B	School A	School B	School A	School B	School A	School B
1	1	Concepts (Sand)	5317.379	11611.148	129.276	202.109	5317.379	11611.148	0.81	0.88
2	3	Concepts (Behav.)	329.303	250.076	8.911	5.592	5646.680	12438.738	0.83	0.91
3	4	Intell. Ability	43.362	72.990	1.244	1.698	5861.523	12621.895	0.85	0.92
4	2	Visual Discrim.	13.932	577.516	0.393	11.950	5889.562	12188.664	0.85	0.90
5	5	Auditory Discrim.	2.881	67.096	0.080	1.577	5892.441	12688.988	0.85	0.92

Table V presents the results of stepwise regression analysis for sub-groups School A and School B, the multiple correlation values for School B appearing similar but marginally superior to those of School A, whilst the reduction in sums of squares are systematically greater for School B, suggesting that after Concepts (Sand), the other variables contribute little to the regression for School A, whilst contributing slightly more to the regression for School B.

The predictive power of the Concepts (Sand) variable is therefore demonstrated for both sub-groups, assuming a linear regression, whilst Auditory Discrimination is shown to be the least powerful predictor for both sub-groups within the regression.

Reference to the intercorrelations presented in Table II may explain the between-school differences in Steps 2, 3 and 4,. For School A, for example, the selection of Concepts (Behavioural) at Step 2 may be as a result of its relatively low correlation with Concepts (Sand) and the relatively low correlation of Visual Discrimination with both and also with the criterion variable (.45, .44 and .42).

However, for School B, the selection of Visual Discrimination at Step 2 may be accounted for by the relatively high correlation of Concepts (Behavioural) with Concepts (Sand) and the relatively high correlation of Visual Discrimination with the criterion variable (.75).

Table VI : The effect of stepwise regression of predictor variables on the criterion variable for the sub-groups Boys and Girls

Step		Variable Selected	Sum of Squares reduced		F for this variable		Cumulative sum of squares reduced		Mult Correl.	
B	G		B	G	B	G	B	G	B	G
1	1	Concepts (Sand)	8820.004	7681.789	188.408	118.232	8820.004	7681.789	0.85	0.83
2	2	Visual Discrim.	303.841	398.641	9.536	6.780	9960.156	8080.430	0.90	0.85
3	4	Intell. Ability	103.228	63.428	3.348	1.147	10063.383	8435.707	0.91	0.87
4	3	Concepts (Behav.)	6.802	206.512	0.218	3.687	10070.184	8286.941	0.91	0.86
5	5	Auditory Discrim.	5.119	19.596	0.162	0.350	10075.301	8455.301	0.91	0.87

Table VI presents the results of the stepwise regression analysis for sub-groups Boys and Girls.

The predictive power of the Concepts (Sand) variable is demonstrated for Boys and Girls, with Visual Discrimination being selected as the second most powerful predictor within this regression, for both sexes, and Auditory Discrimination appering the least powerful predictor.

Reference to the intercorrelations of variables presented in Table III may explain the selection of Visual Discrimination at the second step in the regression for both sub-groups, as, in both cases, Concepts (Behavioural) correlates highly with Concepts (Sand), both correlating highly with the criterion variable, whilst Visual Discrimination yields relatively lower correlations with both Concepts variables, particularly in the sub-group Girls, whilst yielding relatively high correlations with the criterion variable (Boys .70, Girls .63). However, the between-group differences are minimal and insignificant, as represented by the multiple correlation values.

REFERENCES CITED IN TEXT

Albiro J (1969) — in Sheridan M. 1982

Almy C (1950) — "Childrens experiences prior to first grade and success in beginning reading". Contributions to Education No. 154.

Anselmo S (1978) — "Improving home and pre-school influence on early language development". The Reading Teacher Vol 32 No 2. Nov 1978.

Anderson I H, Hughes B O and Dixon W R (1957) — "The rate of reading development and its relation to age of learning to read, sex and intelligence". Journal of Educational Research, March 1957.

Anderson I and Kelly M (1931) — "An inquiry into traits associated with reading disability" in Thackray 1972.

Arnold H (1982) — "Talking : The Way into reading?" Reading Vol 16 No 2. July 1982 79-84.

Ashton-Warner S (1961) — in Melnik & Merritt 1972.

Aukerman R C and Aukerman L C (1981) — "How Do I Teach Reading". New York : John Wiley.

Ayers D and Downing J (1982) — "Testing Children's Concepts of Reading". Educational Research 24.4 277-283.

Bailey T J (1979) — "Effects of auditory perceptual training or reading achievement". Journal of Research in Reading Vol 2 No 1. 1979.

Bateman B (1967) — in Perception and Reading UKRA.

Benda C E (1954) — "Psychotherapy of Childhood" in Carmichael L (ed). Handbook of Child Psychology London, Chapman and Hall.

Benger — in Perception and Reading UKRA.

Benton (1975, 1978, 1982) — in Duane D D, 1983.

Bernstein B (1967) — in (1971).

Bernstein B (1971) — "Class, Codes and Controls" Routledge and Kegan Paul London.

Bernstein B (1973) — "Class, Codes and Controls Vol 3" Routledge and Kegan, Paul London.

Betts E A (1946) "Foundations of reading instruction" New York. American Book Co.

Betts E A (1948) "Remedial and corrective reading : content area approach". Education 68 June 579-596.

Bigelow E B (1934) "School Progress of Underage Children" Elementary School Journal, Vol 35 Nov pp 186-192.

Blank M (1970) "Some Philosophical Influences Underlying Pre-school Interventions for Disadvantaged Children" in F. Williams (ed).

Blatchford et al (1985) "Educational achievement in the infant school : the influence of ethnic origin, gender and home on entry to school". Educational Research Vol 27 No 1. Feb 1985.

Blom, Frey and Praurat (1980) "Paper presented at meeting of American Educational Research Association, 1980.

Bond G L (1935) "Auditory and speech characteristics of poor readers". Contribution to Education, in Thackray 1971.

Bond G L and Tinker M (1957) "Reading difficulties : their diagnosis and correction". Appleton-Century. Crofts Inc. New York.

Browne A (1985) "Young Children's Attention To Textual Context When Reading". Reading 1985 (19) 1.

Brownell W A (1951) "Readiness for Subject Matter Learning". National Education Association Journal, 40 1951 445-446.

Bruner J S (1960) "The process of Education". New York Unigate BKS.

Bullock (1975) "A Language For Life" HMSO London.

Burton W H (1956) "Reading in child development". The Bobbs-Merrill Co Inc. New York.

Calfee R C (1972) "Diagnostic evaluation of visual, auditory and general language factors in pre-readers". Paper presented at American Psychological Association, 1972.

Calfee R C et al (1972) "How a child needs to think to learn and read" in L W Gregg ed.

Carbo M (1983) "Research in reading and learning style : implications for exceptional children" in Exceptional Children 1983 49 (486-494).

Carnine D W (1980) "Two letter discrimination sequences : high-confusion alternatives first versus low-confusion alternatives first". Journal of Reading Behaviour 12 (41-47).

Carroll M W (1948) "Sex differences in reading readiness at first grade level". Elementary English 25 Oct. 1958 pp 370-375.

Cazden C B (1970) "The Neglected Situation in Child Language and Education" in F Williams (Ed) pp 81-101.

Cazden CB (1974) "Concentrated versus Contrived Encounters : Suggestions for Language Assessment in Early Childhood Education" in Davies A, 1977.

Chapman R S (1971) Report on the February 1971 version of the Wisconsin Basic Prereading skill test". Wisconsin Research and Development Centre for Cognitive Learning.

Chazan "Interaction and The Child At Home" in Davies ed 1982.

Chomsky N (1969) "Phonology and reading" in Levin and Williams (eds).

Clark M M (1976) "Young Fluent Readers" Heinemann Education.

Clarke-Stewart K A (1973) Interaction between mothers and their young children : characteristics and consequences. Monographs of Society for Research in Child Development 38 No 153.

Clay M M (1969) "Reading errors and self-correction behaviour". British Journal of Education Psychology 39-169.

Clay M M (1970) "The Reading Behaviour of Five Year Old Children : a research report". N Z Journal of Eductional Studies 2(1) pp 11-31.

Clay M M (1970)	"An increasing effect of disorientation on the discrimination of print : a developmental study". Journal of Experimental Child Psychology 9 pp 297-306.
Clay M M (1971)	"Sand" The Concepts About Print Test. Heinemann Eductional Books.
Clay M M (1972)	"Reading : The Patterning of Complex Behaviour". Heinemann Educational Books.
Clay M M (1972, 1979)	"The Early Detection of Reading Difficulties : A Diagnostic Survey". Heinemann Educational Books.
Combs M (1984)	"Developing concepts about print with patterned sentence stories". Reading Teacher Vol 38 No 2. Nov 1984 IRA.
Critchley M (1979)	"The dyslexic child" London Heinemann.
Cronback (1977)	in Downing and Thackray, 1982.
Crosby R M N (1969)	"Reading and the Dyslexic Child", London Souvenir Press.
Daniels J C and Diack H (1970)	The Standard Reading Tests : London, Chatto and Windus.
Day K C and Day H D (1979)	Test-retest and split-half reliability of Concepts About Print (Sand) and Record of Oral Language. College of Education, Texas Womans Univ.
Day K C, Day H D et al (1980)	"Sex differences in orthographic linguistic awareness". Illinois Reading Council Journal, Oct 1980 8 21-28 IRA.
Day H D and Holingsworth S (1983)	Gender differences in the relationship of nascent conservation and Reading Abilities. Journal of Educational Research 76 83 6.
Dean C D (1939)	"Predicting first grade reading achievement". Elementary School Journal 33, April 1939 pp 609-616.

Dearing M K (1980) "To test the hypothesis that a significant correlation exists between reading age and conceptualisations about print in children between the ages of 5 and 7 years". Unpublished Diploma Study, Totley-Thornbridge, Sheffield City Polytechnic.

Detterman (1982) in Stanovich.

Dewey J (1898) "The primary education fetish". Forum 25 pp 314-328.

Dickson V E (1923) "Mental Tests and The Classroom Teacher". New York : World Books.

Dixon B (1984) "Reading : Mysterious or meaningful beginnings?" Reading 18(3) 168-172.

Dolch E W and Bloomster M (1939) "Phonic Readiness". Elementary School Journal Vol 38.

Doll E (1953) "Varieties of Slow Learners". Exceptional Children Nov 1953 pp 61-64.

Doman G J (1965) "Teach Your Baby To Read" London Cape.

Donaldson M and Wales R (1970) "On the Acquisition of Some Relational Terms" in J Hayes (ed) "Cognition and the Development of Language". Wiley, New York.

Downing J (1963) "Is a mental age of 6 essential for reading readiness?". Educational Research Vol 6 No 1. Nov 16-28.

Downing J A (1969) "How children think about Reading". The Reading Teacher 23 III p 217-30.

Downing J A (1970) "Children's Concepts of Language in learning to read". Educational Research 12(2) 1970 p 106-112.

Downing J (1971) "The Cognitive Clarity Theory Of Learning To Read". In Southgate V, 1972.

Downing J (1972) "Children's Developing Concepts Of Spoken And Written Languages". Journal of Reading Behaviour 4, 1-19.

Downing J (1973) "The Child's Concepts of Language". In Latham W, 1975.

Downing J (1973-1974)	"Child's Conception of a Word". Reading Research Quarterly p 568-82.
Downing J (1975)	"Cultural Differences in children's concepts of reading and writing, British Columbia". British Journal of Educational Psychology 45 1975 312-316.
Downing J (1976)	"Thinking About Reading". May IRA.
Downing J (1977)	"Linguistics for Infants". Reading 11, July 1977 36-45.
Downing J (1978)	"Linguistic Awareness, English orthography and reading instruction". Journal of Reading Behaviour 10, Spring 1978 p 102-114.
Downing J (1980)	"Cultural Expectations and Sex Differences in Reading" in J R Edwards (ed) "Social Psychology Of Reading", Maryland Instit. of Modern Languages.
Downing J (1982)	"Children's metacognitive knowledge about Reading : A Selected Review". Educational Research Vol 24 No 2, Feb 1982.
Downing J and Thackray D (1971)	Reading Readiness ULP.
Downing J, May R and Oliver P (1977)	"Concepts of language in children from differing socio-economic backgrounds". Journal of Educational Research May/June 1977, 70 277-281.
Downing J, Ayers D and Schaefer B (1978)	"Conceptual and perceptual factors in learning to read". Educational Research, Vol 21 No 1.
Downing J, May R and Ollila L (1979)	"A cross-national survey of cultural expectations and sex-role standards in reading". Journal of Research in Reading (2) 8-23.
Downing J, May R and Ollila L (1982)	"Sex Differences and Cultural Expectations in Reading" in Sheridan, 1982.
Downing J and Thackray D (1982)	"Reading readiness is alive and well". Reading Vol 16 No 1 Ap 82 5-9.
Downing J, Ayers D and Schaeffer B (1983)	"LARR Tests Linguistic Awareness in Reading Readiness". NFER Nelson.

Duane D (1983) "Neurobilogical Correlates of Reading Disorders". Journal of Educational Research S/O 1983 Vol 77 No 1.

Dunlop F (1982) "The ideas of male and female". Journal of Philosophy of Education Vol 16.

Durkin D (1959) "A study of children who learned to read prior to first grade". California Journal of Educational Research 10 pp 109-113.

Durkin D (1961) "Children who learned to read at home". Elementary School Journal 63 pp 14-18.

Durkin D (1963) "Children who read before grade one : a second study". Elementary School Journal 64 pp 143-148.

Durkin D (1964) "Early readers - reflections after 6 years of research". Reading Teacher 18 pp 3-7.

Durkin D (1966) "Children Who Read Early". Teacher's College Press.

Durrell D D (1933) "The Influence of reading ability on intelligence measures". Journal of Educational Psychology 24 pp 412-416.

Durrell D D (1940) "Improvement of basic reading abilities". Yonkers Wold Book Co.

Durrell D D (1954) "Learning Difficulties Among Children of Normal Intelligence".

Durrell D, Murphy H and Junkins (1941) "Increasing the rate of learning in first grade reading". Education 62 37-39.

Durrell D D and Murphy H A (1953) "The auditory discrimination factor in reading readiness and reading disability". Education Vol 73 No 7 pp 556-560.

Dwyer C A (1973) "Sex differences in Reading". Review of Educational Research 43 (1973) 455-466.

Dwyer C A (1974) "Influence of children's sex role standards on reading and arithmetic achievement". Journal of Educational Psychology 66 811-816.

Dykstra R and Tinney (1969) "Sex differences in reading readiness : first grade achievement and second grade achievement", in "Reading and Realism" IRA.

Eames T H (1938) "The Occular Conditions of 350 Poor Readers". Journal of Educational Research 32 pp 10-16.

Ehri L C (1981) "Linguistic insight : threshold of reading acquisition" in Waller T G and McKinnon Eds, 1982.

Ehri L C and Wilce L S (1985) "Movement into reading : Is the first stage of printed word learning visual or phonetic?". Reading Research Quarterly Vol XX No 2 pp 163-180.

Evans C (1945) "Reading Readiness for the Kindergarten", Elementary English 22, March 143-146.

Evans M A and Carr T H (1985) "Cognitive Abilities, Conditions of Learning, and the Early Development of Reading Skills". Reading Research Quarterly Vol XX No 3 327-351.

Feeley J T (1982) "A print environment for beginning readers". Reading Vol 16 No 1, Ap 82 pp43-49.

Fendrick P (1935) "Visual characteristics of poor reading". Contributions to Education 656 New York.

Fleming C M (1943) "Socio-economic level and test performance". British Journal of Educational Psychology No 12 pp 74-82.

Fox S E (1976) "Assisting children's language development". The Reading Teacher Vol 29 No 7, Ap 76 pp 660-670.

French J and Franch P (1984) "Gender imbalances in the primary classroom, an interactional account". Educational Research Vol 26 No 2 June 84 p 127.

Froebel F (1902) "The Education of Man" translated by Holland and Turner, London 57-58.

Frostig M and Horne D (1964) "The Frostig Program For The Development of Visual Perception", Follet Publishing Co.

Frostig M (1964) "The Marianne Frostig Developmental Test of Visual Perception".

Gardner D (1948) "Testing results in the infant school". London, Methuen.

Gates A (1924) "The natural and educational significance of physical status and of mental, physcological social and emotional maturity". Journal of Educational Psychology 15 Sept pp 329-358.

Gates A (1937) "The Necessary Mental Age for Beginning Reading". Elementary School Journal, March 497-508.

Gates A (1949) "The improvement of reading", 3rd edition. New York MacMillan Co.

Gates A (1961) "Sex Differences in Reading Ability". Elementary School Journal, May pp 431-434.

Gibson E and Levin H (1975) "The Psychology of Reading". MIT Press.

Goodacre E (1971) "Published reading schemes" in Melnik and Merritt, 1972.

Goodacre E (1972) "Reading-Understanding Teaching Terms". Teacher's World, April 1972.

Goodacre E (1974) "LEA provision for Reading : Reading Centre for the Teaching Of Reading".

Goodall M (1974) "Can 4 year olds read words in the environment?". The Reading Teacher 37 No 6, Feb 84.

Goodman K S (1972) "Reading : the key is in the children's language". The Reading Teacher Vol 25 No 6, March 1972.

Granbard P (1966) "Psycholinguistic Correlates of Reading Disability in Disturbed Children", in Perception and Reading IRA.

Gray W (1937) "The teaching of reading" in Thackray 1972.

Groff P (1982) "Sight-words : the major myth of reading". Reading Vol 16 No 3, Dec 82 129-134.

Hall M A (1985) "Focus on language experience learning and teaching". Reading 1985 19 (1).

Hannon P W and Cuckle P (1984) "Involving parents in the teaching of reading : a study of current school practice". Educational Research Vol 26 No 1, Feb 1984.

Hardy (1973) in Clark 1976.

Hare V C (1984) "What's in a word : a review of young children's difficulties with the construct 'word'". The Reading Teacher Vol 37 No 4, Jan 84.

Harris D (1963) "Goodenough-Harris Drawing Test Manual", Harcourt, Brace and World Inc.

Harrison M L (1939) "Reading Readiness" New York, Houghton Co.

Harrison M L (1939) "Readiness for the thinking side of reading". Child Education 15 Jan 1939 213-218.

Harste, Burke and Woodward (1983) in Hall, 1985.

Hart L A (1983) "Programs, patterns and downshifting in learning to read". The Reading Teacher Vol 37 No 1, Oct 83.

Havighurst R J (1953) "Human Development and Education". Longmans, Green and Co.

Hartley D N and Quire P G (1982) "A critical appraisal of Marie Clay's Concepts About Print Test". Reading 16(2) 109.

Hays E (1933) "Why Children Fail". Eductional Method 13 p 25.

Hayes J R (1970) "Cognition and the development of Language". New York, John Wiley 1970 pp 235-60.

Heibert G H (1978) "Preschool children's understanding of written language". Child Development 49 Sept 669-680.

Hildreth G (1958) "Teaching Reading". Henry Holt and Co.

Hoffman S and Fillmer T H (1979) "Thought, language and reading readiness" in The Reading Teacher Vol 33 No 3 1979.

Holdaway D (1979) "The Foundations Of Literacy". Gosford NSW: Ashton Scholastic.

Holmberg B (1982) "A paradigm for research in Eduction". Journal of Philosophy of Education Vol 16 No 82 19-33.

Hubbard D and Salt J (1975) "Family support and the young reader". Forum, Spring 1975 63-66.

Huey E B (1962) "The Psychology and Pedagogy of Reading". Cambridge, MA MIT Press. (Original work published 1908).

Hunt J (1961) "Intelligence and Experience". The Ronald Press New York.

Hunter-Grundin E (1981) "Early Reading Development : A bibliography". Friedland, Harper and Row.

Hymes J C (1958) "Before the child reads". New York Row, Peterson.

Ingham J (1981) "The Bradford BOok Flood Experiment". Heinemann Education.

Inglis W B (1949) "The Early stages of reading", studies of Reading Vol I University of London Press.

Irving (1980) In Morrow, 1985.

Iverson B and Walberg H (1982) "Home environment and school learning : a quantitative synthesis". Journal of Experimental Education 1982 50 144-151.

Jaffares D J and Cosen G V (1972) "Auditory Perception". Reading Research Quarterly 1972 Vol 7 No 2.

Jonathan R M (1983) "Education, Gender and the Nature/Culture Controversy". Journal of Philosophy of Education Vol 17 No 1, 1983.

Johns J L and Ellis D W (1976) "Reading : Children tell it like it is". Reading World, Dec 1976 16.

Johns J L (1980) "First grader's concepts about print". Reading Research Quarterly No 4, 1980 XX 4.

Jones J (1981) "Advising parents on reading". Reading Vol 15 No 2, July 1981 UKRA.

Kellmer Pringle et al (1966) "11,000 seven year olds : studies in Child Development". Longman, London.

Kemp P (1975) Unpublished Diploma study, Totley-Thornbridge, Sheffield City Polytechnic.

Ladd M (1933) "The relationship of social, economic and personal characteristics to reading ability". Contributions to Education 582, Columbia University.

Lehman G B (1972) "Selective strategies in children's attention to task relevant information". Child Development 43 197-209.

Lesiak J (1978) "Reading in kindergarten : what research doesn't tell us". The Reading Teacher Nov 1978 Vol 32 No 2 135.

Lineham C B (1958) "Early instruction in letter names and sounds as related to success in beginning reading". Journal of Eduction Boston University, 140 Feb pp 44-48.

Lunzer E A, Dolan T and Wilkinson J E (1976) "The Effectiveness of Measures of Operativity, Language and Short-Term Memory in the Prediction of Reading And Mathematical Understanding". British Journal of Educational Psychology 46 295-305.

Lynn (1963) in Thackray, 1971.

Maccoby E E and Jacklin C N (1974) "The Psychology of Sex Differences". Stanford University Press.

Marsh G et al (1981) "A Cognitive Theory Of Reading Acquisition" in MacKinnon and Waller, 1981.

Mason J M (1977) "Suggested relationship between the acquisition of beginning reading skills and cognitive development". Journal of Educational Research 70, March 1977 p 195-199.

May R B and Hutt C (1974) "Modality and sex differences in recall and recognition memory". Child Development 45 1974 (228-231).

Mewhort D J and Campell A J (1981) "Towards A Model Of Skilled Reading", in MacKinnon and Waller, 1981.

Monroe M (1935) "Diagnosis and treatment of reading disabilities". 34th Year book of the National Society for the Study of Education, Chicago, University of Chicago Press pp 214-215.

Monroe M (1946) "Children who cannot read". University of Chicago Press.

Moon C and Wells G (1979) "The Influence of Home on Learning To Read". Journal of Research in Reading Vol 21 Feb.

Moore T (1967) "Language and Intelligence : A Longitudinal Study". Human Development 10. 1967 88-106.

Moore P J (1982) "Children's metacognitive knowledge about reading : a selected review". Educational Research Vol 24 No 2, Feb 82 120-128.

Moore D W (1983) "What research did not say to the reading teacher : A case study". The Reading Teacher, Oct 1983 Vol 37 No 1 p 14.

Morphett M V and Washburn C (1931) "When should children begin to read?". Elementary School Journal 31 Mar pp 496-503.

Morris J M (1966) "Standards and progress in reading". NFER.

Morris R (1963) "Success and failure in learning to read". London McMillan.

Morrow L M (1985) "Reading and retelling stories : strategies for emergent readers". The Reading Teacher Vol 38, 9 May 1985.

Moseley, C and D (1977) "Language and Reading Among Underachievers". NFER.

McGraw M B (1936) "Growth : A study of Johnny and Jimmy". New York : Appleton-Century-Croft.

McLaughlin K L (1928) in Thackray 1971.

Nelson (1973) in Anselmo 1978.

Nichols J N (1983) "Using prediction to increase content area interest and understanding". Journal of Reading Vol 27 No 3, Dec 1983.

Nurss J R (1979) "Research on the Assessment of pre-reading skills - an American perspective". Reading Vol 13(1) Ap 1979.

Oommen C (1973) in J Downing ed 1973.

Patel P G and Paterson P (1982) "Precocious reading acquisition - psycholinguistic development, IQ and home background". First Language Vol 3 pt 2 No 8 139-153.

Pestalozzi J H (1907) "How Gertrude Teachers Her Children". Holland and Turner.

Piaget J (1952) "The Language and Thought of the Child". London Routledge and Kegan Paul.

Piaget J and Inhelder B (1969) "The Psychology of the Child". London Routledge and Kegan Paul.

Pick A D (1970) "Some basic perceptual processes in reading". Young Children 1970 25, 162-181.

Plowden (1967) "The Plowden Report". HMSO.

Potts J (1976) "Beyond Initial Reading". Unwin Educational Books.

Preston R C (1962) "Reading achievement of German and American Children". School and Society 90, 1969 350-354.

Raban B and Stenning J (1982) "Reading for meaning : an investigation of the effect of narrative in 2 reading books for 7 year olds". Reading 1982 16(3) 153-162.

Raybold E (1929) in Thackray 1971.

Reid J (1966) "Learning to think about reading". Eductional Review (9).

Robinson H (1946) "Why pupils fail in reading". University of Chicago Press.

Roney (1984) "Background experience is the foundation of success in learning to read". The Reading Teacher Vol 38 No 2, Nov 1984.

Rosen C L (1966) in Gibson and Levin 1975.

Rosen C L and Ohmacht (1968) "Perception Readiness and Reading Achievement in First Grade" in 'Perception and Reading', IRA.

Rosner J (1971) "Phonic Analysis Training and beginning reading skills". Learning Research and Development Centre, University of Pitsburg.

Rosner J (1974) "Auditory Analysis in Training With Pre-readers". The Reading Teacher 27 4.

Rousseau J (1762) "Emile". Everyman Translation B Foxley.

Russell D H (1949) "Children Learn To Read". Ginn and Co.

Sanderson (1963) in Thackray 1971.

Southgate V (1968) "Formulae for beginning reading tuition". Education Research Vol II No 1, Nov 1968 23-29.

Southgate V (1980) "The Books 7 to 9 year olds read, and their views on them". UKRA Warwick 1980.

Stanley J C (1973) "Compensatory Education For Children Ages 2-8, Recent Studies of Educational Intervention". John Hopkins University Press Baltimore.

Stanovich et al (1982) "Intelligence, Cignitive Skills and Early Reading Progress". Reading Research Quarterly 1984 XIX No 3.

Stanworth M (1981) "Gender and Schooling : A Study of Sexual Divisions in the Classroom". London : Women's Research and Resources Centre.

Steadman S and Gipps (1984) "Teachers and testing : pluses and minuses". Educational Research Vol 26 No 2, June 1984.

Stenning J (1981) "A Victorian-style reading lesson". Reading Vol 15 No 3, July 1981.

Stroud J (1956) "Psychology In Education", Langmans, Green & Co.

Samuels S J (1983) "A Cognitive Approach To Factors Influencing Reading Comprehension". Journal of Educational Research Vol 26, May/June 1983 No 5 p 261.

Savin H B (1972) in Kavanagh and Mattingly (eds).

Savin H B and Bever T G (1970) "The non-perceptual reality of the phoneme". Journal of Verbal Learning and Verbal Behaviour 1970 9.

Schonell F (1942) "Backwardness in the basic subjects". Oliver and Boyd.

Schonell F (1961) "The Psychology and Teaching Of Reading". Oliver and Boyd.

Scott C M (1947) "An evaluation of training in readiness classes". Elementary School Journal 48.

Sheldon W and Carillo L (1952) "Relation of parents, home and certain developmental characteristics of children's reading ability". Elementary School Journal 262-270.

Singer H, McNeil J and Furse L (1984) "Relationship between curriculum scope and reading achievement in elementary schools". The Reading Teacher Vol 37 No 7.

Smith N (1950) "Readiness for reading and related language arts". A Research Bulletin of the National Committee on Research in English, New York.

Smith F (1977) "Making Sense of Reading and Reading Instruction". Harvard Educational Review 47, Aug 1977 386-95.

Smith F (1978) "Reading". Cambridge University Press.

Smith F and Feathers K (1983) "The role of reading in content classrooms". Journal of Reading 27 262-7.

Taylor C D (1950) "The effect of training on reading readiness". Studies in Reading Vol 11 London, University of London Press.

Thackray D (1964) "The Relationship Between Reading Readiness And Reading Progress". University of London, 1964.

Thackray D (1971) "Readiness For Reading With ita and to". Chapman, London.

Thackray D and Thackray L (1972-1974) "Thackray Reading Readiness Profiles". Hodder and Stoughton.

Thackray D (1972) "Readiness To Read". Chapman, London.

Thompson G B (1976) "Sex Differences in Reading Attainments". Educational Research 18(1) 17-975-76 16-22.

Tinker M (1932) "Diagnostic and Remedial Reading". Elementary School Journal 33.

Tizard J, Schofield W and Hewison J (1982) "Collaboration Between Teachers and Parents In Assisting Children's Reading". British Journal of Educational Psychology 52 1-15, 1982.

Tobin (1981) in Vukelich, 1984.

Tough J (1973) "Children's Use Of Language". Educational Review, November 1973.

Tough J (1976) "The Development of Meaning".

Tovey (1976) "Children's perceptions of reading". The Reading Teacher Vol 29 No 6, March 1976.

Townsend D (1981) "Reading and The Home". Reading Vol 15 No 2, July 1981.

Trudgill P (1975) "Accent, Dialect and The School". Edward Arnold.

Van Allen R (1961) in "Relevance versus ritual in reading" in Downing, in Melnik and Merritt, 1972.

Venezky R L (1971) "The prereading skills program". Madison : Wisconsin Research and Development Centre For Cognitive Learning.

Vernon M D (1957) "Backwardness In Reading : A study of its nature and origin". Cambridge University Press.

Vernon M D (1960) "The Investigation of Reading Problems Today". British Journal of Educational Psychology Vol 30 pp 146-154.

Vernon P G (1969) "Intelligence and the Cultural Environment". Methuen and Co Ltd.

Viitaniemi (1965) "Differences in Reading between the sexes". Education and Schools 51, 1965.

Vukelich C (1978) "Parents are teachers : A beginning reading program". The Reading Teacher Vol 31 No 5, Feb 1978.

Vukelich C (1984) "Parents role in the reading process : A review of practical suggestions and ways to communicate with parents". The Reading Teacher Vol 37 No 6, Feb 1984.

Vygotsky L S (1962) "Thought and Language". MIT Press.

Vygotsky L S (1963) "Learning and mental development at school age", in Simon, B and J (eds) 'Educational Psychology in the USSR' London, Routledge and Kegan Paul.

Wanat (1976) "Reading Readiness". Visible Language 10 105-127.

Wareham S M (1982) "A discription of an attempt to teach reading skills through writing skills to top infants". Reading (1982) 16(3) 135-142.

Way J G (1973) "Teaching Listening Skills". The Reading Teacher 26(5), Feb 1973 472-6.

Wechsler D (1949) "Wechsler Intelligence Scale For Children". Psychological Corporation, New York.

Wedge P and Prosser H (1973) "Born To Fail?". Arrow Books.

Weintraub S (1967) "What Research Says To The Reading Teacher". The Reading Teacher, 20 March 1967 551-558.

Wells C G (1980) "Adjustments In Adult-Child Conversation : some effects of intervention" in Giles et al (eds).

Wells C G (1982) in Davies A, 1982.

Wells C G (1982) "Story Reading and the Development Of Symbolic Skills". Australian Journal of Reading.

Wells C G and Raban (1979) "Children Learning To Read". University of Bristol Social Science Research Project.

Wepman (1968) in Perception And Reading 1968 IKRA.

Whitehead F (1977) "Children And Their Books". MacMillan London.

Young N and Gaier G L (1951) "Implications in emotionally caused reading retardation". Elementary English 28 271-275.

Yule W and Rigley (1982) "Predicting Future Reading Attainment from The WPPSI". Journal of Research in Reading (1982) 5(1) 67-74.

Zigler and Butterfield (1968) "Motivational aspects of changes in IQ test performance of culturally deprived nursery school children". Child Development Vol 39 pp 1-14.

GENERAL BIBLIOGRAPHY

Arnold H (1982) "Talking : the way into reading?". Reading 16 (2) 79-84, 1982.

Berg L (1977) "Reading and Loving"

Bernstein B (1973) "Class, Codes and Controls" Vol 3. Routledge & Kegan, Paul London.

Blatchford et al (1985) "Educational achievement in the infant school : the influence of ethnic origin, gender and home on entry skills". Educational Research Vol 27 No 1, Feb 1985.

Brown A (1985) "Young Children's Attention To Textual Content When Reading". Reading 1985 (19) 1.

Chazan M (1973) "Education in the Early Years". University College of Swansea Faculty of Education.

Clark M (1976) "Young Fluent Readers". Heinemann Eduction.

Clay M (1979) "The early Detection Of Reading Difficulties. A Diagnostic Survey With Recovery Procedures". Second edit. Heinemann.

Clay M (1972) "Reading - The Patterning Of Complex Behaviour". Heinemann Eduction.

Davies A (Ed) (1977) "Language and Learning In Early Childhood". Heinemann Education, London.

Davies A (Ed) (1982) "Language and Learning In Home And School". Social Science Research Council, Biddles Ltd.

Day H D and Holingsworth S (1983) "Gender differences in the relationship of nascent conservation and Reading Ability". Journal of Eductional Research 76 83 6.

Deschant G and Smith H (1977) "Psychology In Teaching Reading". Prentice-Hall.

Dixon B (1984) "Reading : mysterious or meaningful beginnings?". Reading 18(3) 168-172.

Downing J (1982)	"Children's Metacognitive Knowledge About Reading : A Selected Review". Educational Research Vol 24 No 2, Feb 1982.
Downing J and Thackray D (1982)	"Reading Readiness Is Alive And Well". Reading Vol 16 No 1. Ap 82 5-9.
Duane D (1983)	"Neurobiological Correlates Of Reading Disorders". Journal of Educational Research s/o 1983 Vol 77 No 1.
Ehri L C and Wilce L S (1985)	"Movement into reading : Is the first stage of printed word learning visual or phonetic?" Reading Research Quarterly Vol XX/2 pp 163-180.
Evans M A and Carr T H (1985)	"Cognitive Abilities, conditions of learning and early development of reading skill". Reading Research Quarterly Vol XX No 3 327-351.
French J and French P (1984)	"Gender imbalances in the primary classroom, an interactional account". Eductional Research Vol 26 No 2 June 1984 p 127.
Gibson E J and Levin H (1975)	"The Psychology Of Reading" MIT Press.
Giles H, Robinson W P and Smith P M (Eds) (1980)	"Language : Social-Psychological Perspectives". Pergamon Press Oxford.
Goodacre E (1971)	"Children and Learning To Read". Routledge and Kegan, Paul London.
Goodacre G (1974)	"LEA Provision For Reading" : Reading Centre for the Teaching Of Reading.
Goodman K S (1972)	"Reading : The Key is the child's language". The Reading Teacher Vol 25 No 6 March 1972.
Guilford	"Statistics In Psychology And Education".
Hall M A (1980)	"Teaching Reading As A Language Experience". Charles E Marrill Publishing Co.
Hall M A (1985)	"Focus on language experience learning and teaching". Reading 1985 19(1).

Hare V C (1984) — What's in a word : a review of young children's difficulties with the construct 'word'". The Reading Teacher Vol 37 No 4.

Hart L A (1983) — "Programs, patterns and downshifting in learning to read". The Reading Teacher. Vol 37 No 1, Oct 1983 5.

Hartley D N and Quire P G (1982) — "A critical appraisal of Marie Clay's Concepts About Print Test". Reading (1982) 16(2) 109-112.

Hubbard D and Salt J (1975) — "Family Support and the young reader". Forum, Spring 1975 63-66.

Hunter-Grundin E (1981) — "Early Reading Development : A biblography". Friedland, Harper & Row.

Ingham J (1981) — "The Bradford Book Flood Experiment". Heinemann Education.

Latham W (1975) — "The Road To Effective Reading". London Ward Lock.

Levin H and Williams J P (Eds) (1970) — "Basic studies in reading". New York, Basic Books.

Lunzer E A, Dolan T and Wilkinson J E (1976) — "The Effectiveness of Measures of Operativity, Language and Short-Term Memory In The Prediction Of Reading And Mathematical Understanding". British Journal of Educational Psychology 46 295-305.

Melnik A and Merritt J (1972) — "The Reading Curriculum". OUP.

Morrow L M (1985) — "Reading and retelling stories : strategies for emergent readers". The Reading Teacher Vol 38, 9 May 1985.

McGraw and Hill — "Non Parametric Statistics For The Behavioural Sciences".

McKinnon G E and Waller T G (1981) — "Reading Research, Advances In Theory And Practice Vol 3". Academic Press.

Page B and Jackson A (1982) — "The Belfield Reading Project". Early Childhood Vol 2 No 7, April 1982 3-5.

Roberts G R (1982) — "Misleading Assumptions". Reading Vol 16 No 2, July 1982 85-90.

Sheridan G M (Ed) (1982)	"Sex Stereotypes and Reading". Research and Strategies, IRA Newark Delaware.
Smith F (1978)	"Reading". Cambridge University Press.
Stanovich, Cunningham and Feeman (1982)	"Intelligence, Cognitive Skills and Early Reading Progress". Reading Research Quarterly 1984 XIX No 3.
Steadman S and Gipps (1984)	"Teachers and testing : pluses and minuses". Educational Research Vol 26 No 2, June 1984 p 121.
Stott D H (1981)	"Teaching Reading : the psycholinguistic invasion". Reading Vol 15 (3) 19-25.
Thackray D (1972)	"Readiness to Read". Chapman.
Trudgill P (1975)	"Accent, Dialect And The School". Arnold.
Vukelich C (1984)	"Parent's role in the reading process : A review of practical suggestions and ways to communicate with parents". The Reading Teacher Vol 37 No 6, Feb 1984.
Williams F (Ed) (1971)	"Language and Poverty". Markham Publishing Co. Chicago.

mark with a finger or pencil.)
1 point for explanation of function or name.

Score:

applied to the whole text or a line, a word or a
letter.

Corresponding Item 4
Say: *"Draw a blue line to show me which way to go."*

Corresponding Item 5
Say: *"Draw a path with your blue line to show me where to go."*

Page 2. Corresponding Item 9
Text: He saw a butterfly in the garden. (Inverted print.)
Test: Response to inverted print.
Say: *"Draw a red line to show me where to go; draw a path with your line."*

(Page 3: Illustration of butterfly in garden)

Page 4. Corresponding Item 10
Text: in the garden pond.
He saw fish.
Test: Line sequence.
Say: *"Draw a red dot where I start to read."*
Read immediately the bottom line first, then the top line. Do not point.

(Page 5 text: They sparkled silver and green. (Illustration))

Pages 6/7. Corresponding Item 11
Text: He **a saw** little frog hop out of the pond. (Page 6.)
The colours **fo eth** frog gleamed **ni the usn**. (Page 7.)
Test: A left page is read before a right page.
Say: *"Draw a red dot where I start reading."*

Page 6. Corresponding Item 12
Test: Word sequence.
Say: *"If you see something wrong on this page draw a red wiggly line under it."*
(Point to the page number 6 - not to the text.)
Read the text slowly as if it were correct.

Page 7. Corresponding Item 13
Test: Letter order.
Say: *"If you see something wrong on this page trace over it in red."*
(Point to the page number 7.)
Read the text slowly as if it were correct.

Page 8. Corresponding Item 14
Text: His **cloours** were the **yelolw** and green and **bronw** shades of the **gadren**.
Test: Re-ordering of letters within a word.
Say: *"If you see something wrong with the writing on this page cross it out in red."*
Read the text slowly as if it were correct.

(Page 9 : Illustration of the garden.)

Page 10. Corresponding Item 15
Text: Did the cat pounce on the frog or the fish or the butterfly? No.
He just closed his green eyes, sleepily.
Test: Concept of question mark.

Say: *"If you see a question mark, trace over it in red."*

Corresponding Item 16
Test: Concept of Full stop.
Say: *"If you see a full stop, draw a ring around it in blue."*

Corresponding Item 17
Test: Concept of Comma.
Say: *"If you see a comma, cross it out in green."*

Page 11. Corresponding Item 18
Text: "Look at Samson, asleep again," said James, leaning his bicycle against the garden wall.
Test: Concept of quotation marks.
Say: *"If you can see speech marks or talking marks, cross them out in black."*

Corresponding Item 21
Test: Letter concepts.
Say: *"Cross out just one letter with red."*
"Cross out two letters with green."

Page 12. Corresponding Item 22.
Text: Samson, the cat, opened his green eyes and looked around the garden.
Test: Word concepts.
Say: *"Draw a blue line under just one word."*
"Draw a red wiggly line under two words."

Corresponding Item 23
Test: First and last letter concepts.
Say: *"In black cross out the first letter of a word."*
"In green cross out the last letter of a word."

Corresponding Item 24
Test: Capital letter concept.
Say: *"Trace over a capital letter in red."*

I took a little spade
and I dug
a little hole.

I dug a little hole
and the waves
splashed in.

I dug a big hole
and I piled up
the sand.

The waves splashed
into my hole in the sand.

8

and I splashed with my feet.
I jumped in the hole

10

I sat the in hole
and I splashed my with feet.

12

I sat ni eth hole
and I wondered.
Could a boat float heer ?
Could a whale wsim here ?

13

Shall I mkae a hlil
wtih a coconut tree
and a huose for me
and a yelolw star-fish ?

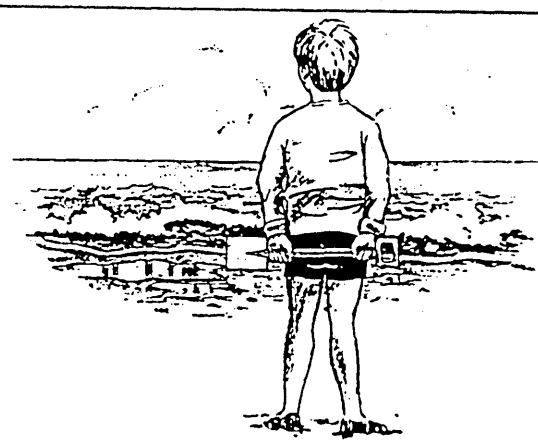
14

"Home time," called Mother.
"Time to go home,"
she said.

16

On another day
I looked for that hole
All I saw was
flat sand, soft sand,
wet sand and waves.
But oh, no hole!

18



The waves splashed in the hole.

20

5cvm3oirv) ike *coA l* opened

\ru$ qreen eyes cuvd

A C(xi Cuiitd

looted *around tint*

garden U4vad ddd lae see?

fclae *q c L rd e n fro n d* *

rle 5avv

TKeu sparkled silver

a*vd qreerv.

inm

hop out the of pond.

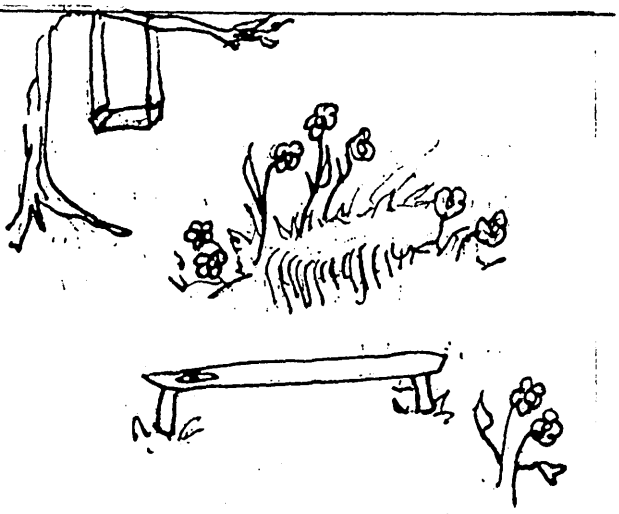
6

The colours to kin frog gleamed ni the usn.

7

His cloours were the yelolw and green and bronw shades of the gadren.

8



9

Did the cat pounce on the frog or the fish or the butterfly? No. He just closed his green eyes, sleepily.

10

"Look at Samson, asleep again," said James, leaning his bicycle against the garden wall.

11

Samson, the cat, opened his green eyes and looked around the garden.

12